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ASSESSMENT OF PERFORMANCE OF WATER SUPPLY SUSTAINABILITY MODELS IN CHIKWAWA DISTRICT FINAL REPORT



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August, 2018

Acronyms

ADC	: Area Development Committee
APM	: Area Mechanics
BB	: Borehole Bank
BUA	: Borehole Users Association
CDA	: Community Development Assistant
DCDO	: District Community Development Officer
DCT	: District Coordination Team
DEHO	: District Environmental Health Officer
DWDO	: District Water Development Officer
GVH	: Group Village Head
HH	: Household
HAS	: Health Surveillance Assistant
MoAIWD	: Ministry of Agriculture Irrigation and Water Development
NGO	: Non-Governmental Organization
O&M	: Operation and Maintenance
TA	: Traditional Authority
VSM	: Viable System Map
W4P	: Water for People
WASH	: Water Sanitation and Hygiene
WMA	: Water Monitoring Assistant
WPC	: Water Point Committee
WUA	: Water Users Association

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Executive Summary

Water for People Malawi has been providing support to Chikwawa District Council to strengthen and develop mechanisms that contribute to sustainability of water supply investments in order to ensure continued and sustained use of the water infrastructure in three main ways and these are:- over the years, the district has established a network of Area Pump Mechanics (APMs) and shop owners in the district who have been trained and supported to be part of the supply chain in ensuring that boreholes are repaired within a short period after they breakdown; under a pilot project, they piloted Borehole Users Associations (BUAs) that have been set up to provide preventative borehole maintenance services; and for the last three years, they have been supporting setting up of Borehole Banking in its impact areas as one way of providing alternative finance management options for WPCs.

The main objective of this assignment was to provide an in-depth assessment of the performance of these four structures, including a baseline, a comparative study of growth of maintenance funds using different savings models, to identify strengths and weaknesses affecting the sustainability of the structures, and to recommend the way forward to address them.

The study was carried out through both a desk review and field data collection, from which information was analyzed for trends. Techniques such as Key Informant Interviews, Focus Group Discussions and Household Survey were used during data collection. Key stakeholders consulted included Water for People staff, Chikwawa District Council staff, BASEDA staff, Borehole Users Association committees, Water Point Committees with and without Borehole Banks, Area Pump Mechanics, Shop Owners and a few households around each water point.

Thematic analysis was used to establish the main themes and topics arising from the interviews and focus group discussions. Basic descriptive statistics were generated from the data that were collected in mWater from both the water point surveys and the household surveys. Finally, the consultants combined their individual thematic analyses to synthesize the results and collaboratively discussed their meaning to draw conclusions and recommendations jointly.

Overall, the study found that Borehole Banks are a good approach to ensure that the Water Points are functional, with functionality rates of water points with borehole banks reaching 68% versus 44% for those without. Furthermore, rates of functional water points with minor problems were found to be only 32% for those with borehole banks, while those without had a higher rate of minor problems at 50%. Finally, there were no non-functional water points found for those using borehole banks, with 6% non-functional boreholes for those without. Results also showed that the potential savings generated through borehole banking are above the average savings observed from more traditional contribution methods, in some cases increasing savings by over 700%.

Data analysis revealed that borehole banking disproportionately benefits those WPCs that were struggling to save more than 20,000 MK in the past, both in terms of overall

savings and in terms of cash availability for O&M. However, those WPCs that were already saving more than 20,000 MK before starting a borehole bank saw a more moderate increase in overall savings, and in fact experienced a decline in cash available for O&M at the water point.

The major threat to sustainability of the Borehole Banks seems to be the accountability mechanisms put in place for the loans to be repaid. This is a challenge that seems to be increasing as time goes on, making it more pertinent to address in order to protect the savings generated by the concept. Chiefs were often found to be the primary culprits of diverted funds from the borehole bank. More than half of respondents interviewed brought up the issue of borehole bank accountability in some form. Going forward, there are many options for enhancing accountability, primarily through separating the management of the loan fund from the management of the water point, and through increasing participation of the wider community in the bank.

In terms of the Borehole Users Associations, the overall performance of the structure against the intended outcomes was relatively low. The average savings in the maintenance fund after two years of operation was K226,640. On average, 60% of BUA members were paid up members in a given month, however only 22.5% of the annual expected revenue is generated. The BUAs were found to be spending 81% of the revenue generated on items such as office improvements, administrative costs, and conducting repairs with an average cost of just under K17,000. In two years of operation, there were only two major repairs financed costing over K30,000, at a maximum cost of K44,500.

Although the BUA pilot has resulted in a number of positive outcomes such as improved monitoring of WPCs, these gains may not justify the effort needed to continue implementing the BUA. This is especially in light of the fact that the major purpose of generating a larger maintenance fund has not been realized through the model, the long-term sustainability of the structure through volunteerism is questionable, and there are other existing stakeholders available to fill monitoring and repair roles. The way forward in this case may be to transition the model to one that is Area Pump Mechanic-driven and uses service contracts both to generate profit for the mechanics and to grow a maintenance fund.

There are three main options that have been recommended and how a shift in the BUA model can be implemented. The options are as follows:

Option 1: Transition the BUA model to be an APM-driven model, and strengthen the DWDO linkages: Most of the major benefits seen by the operations of the BUA to-date are related to conducting every day repairs (also the mandate of APMs) and not necessarily the growth of a major repair fund. The activities of the BUA have become focused on conducting repairs regardless of magnitude of the cost. This is also rooted in the fact that there is pressure for the BUA to show immediate value for money to WPCs that pay into the BUA, which is something that APM service contracts also achieve. Putting APMs at the heart of the structure would make it market-driven and not as dependent on volunteerism.

Option 2: Maintain the BUA model where it has been implemented with some modifications: As the two BUAs have already been instituted in a concrete way, it may be difficult to transition them to an APM-driven model. In this case, there are actions that can be taken to strengthen the two existing BUAs without necessarily expanding the concept to other areas at this point. In the areas without existing BUAs, the recommendation to pursue an APM-driven model still applies.

Option 3: Harmonization of community water supply management models under WUAs: Although it is true that WUAs are currently an institution that look solely at gravity fed schemes with communal taps, it is also true that these institutions are struggling financially, yet they may have hundreds of tap committees as members. As we have observed that the BUAs are also struggling financially, it may be worth a larger study to explore whether harmonizing these structures in areas where they both exist could help increase revenue and coordination on issues to do with community water supply. The management structure is almost identical between the two structures.

The performance of Area Pump Mechanics in the district has been generally high. Data collected showed that 65.5% of Water Point Committees had used an APM to conduct a repair in the past, and of those, 86% rated the level of service as either 'very good' or 'excellent.' Data comparing those water points that had broken down and had hired an APM showed that hiring guaranteed functionality of the water point, whereas 8% of those that had a breakdown but did not hire an APM remained non-functional.

Fortunately, Area Pump Mechanics have been motivated to stay moderately active for long periods of time, some even up to ten years, on what is essentially a volunteer basis. The injection of motivation that could be realized through the introduction of service contracts as well as a stronger connection to each other and the District Council could push their performance to another level, improve preventative maintenance rather than simply performing reactive maintenance activities, and improve monitoring of water points in the district.

Similarly, the spare parts shops have also shown to be active for longer periods of time, some for up to six years. The study confirmed the assumption that spare parts shops can be sustained if coupled with the sale of other types of goods, given the low turnover of borehole parts. Despite this low turnover, more than 80% of shops had adequate stocks and variety of spares available at the time of the interviews. It is clear that the intensification of the spare parts shops in the rural areas of the district has greatly impacted on the availability of spare parts at that level and therefore reduced pump downtime.

In conclusion, the study confirms that Borehole Banks, Area Pump Mechanics, and spares shops are performing adequately enough to serve their intended purpose, though there are areas for improvement that have been identified. However, the study revealed that despite genuine efforts, there are structural factors that prevent the Borehole Users Associations from performing on key intended outcomes, specifically the generation of a maintenance fund for capital maintenance, and that BUAs should be transitioned to another model.

1.0. Introduction

1.1. Background to the assignment

Water for People Malawi has been providing support to Chikwawa District Council to strengthen and develop mechanisms that contribute to sustainability of water supply investments in order to ensure continued and sustained use of the water infrastructure. This support has been provided through various avenues including, among others, conducting Community Based Management training for water point committees at each borehole installed, as well as revamping committees at boreholes that were constructed previously by other organisations; ensuring technical excellence of the drilling and supervision of installation of new boreholes; supporting the recruitment of additional water monitoring assistants for the local government water development office; the establishment of a network of Area Pump Mechanics (APMs) and shop owners in the district who have been trained and supported to be part of the supply chain in ensuring that boreholes are repaired within a short period after they breakdown; under a pilot project, they piloted Borehole Users Associations (BUAs) that have been set up to provide preventative borehole maintenance services; and for the last three years, they have been supporting setting up of Borehole Banking in its impact areas as one way of providing alternative finance management options for WPCs.

1.1.1. Objectives

The main objective of the assignment is to provide an in-depth assessment of the performance of the institutions and arrangements and to identify capacity development needs. The specific objectives (SO) of the study are as follows;

- SO 1:** Develop a baseline assessment against which performance of service models and performance of the local institutions (borehole banks and WPCs) can be measured.
- SO 2:** Critically analyse the relative strengths and weaknesses of the Borehole banking approach to community management, and the more traditional WPC approach.
- SO 3:** Assess the performance of BUAs, determine their effectiveness and develop a capacity-building plan to strengthen them. Further, through the assignment, the consultant should advise on the direction that needs to be ‘taken if the objectives of the BUAs are to be realized, particularly in relation to “insurance” or service contracts for borehole maintenance.
- SO 4:** Explore and analyse the political, economic, environmental, institutional, and legal factors that enhance or undermine the effectiveness of the borehole banks, APMs and BUAs in Chikwawa. With this, provide an understanding of the factors critical to the success of borehole banks, and suggest approaches to wider adoption of borehole banking as basis for securing resources for pump maintenance and managing that maintenance.

SO 5: To understand the factors which are making APMs and Borehole banks in some villages to perform much better than others

SO6: To provide specific recommendations for changes and performance improvement for borehole bank operations, BUAs, shop owners and APMs services required for creating a more enabling WASH environment in the district.

1.1.2. Main tasks

The three main tasks for the consultants for the assignment are outlined in the scope of work for the assignment which include;

Task 1: The maintenance services provided by existing APMs, local shop owners and linkages to spare parts suppliers.

Task 2: The maintenance and management services provided by BUAs.

Task 3: The relative effectiveness of Borehole Banks vs “traditional” water user committees on functionality of boreholes, through developing an understanding of fund availability, relative participation of community members and speed of repairs, under these two models.

For details of what was expected of the consultancy see the Terms of Reference in **Annex 6.1.**

2.0. Approach and Methodology

Both qualitative and quantitative methodologies were employed in order to exhaustively capture all the relevant data based on the nature of the outcome and output level indicators of the intervention.

As the main focus of the assessment was on sustainability, a modified systems mapping approach was also employed to underline the collection of data, including investigation of communication and information flows, technical support avenues, and regulation and accountability structures that typically determine system resilience.

Comparisons between the BUA-BB Water Points and the non-BUA-BB Water Points was also done to assess the effect/impact of other structures in the system.

2.1. Desk review

The Consultants reviewed some of the project documents and other specific documents for particular structures (BUAs, APMs and Shop Owners) in order to get familiar with the programme from inception to the end. This helped consultants to establish plausible baseline indicators of the current performance against which the future progress will be measured.

As part of the desk review, a theoretical map of the structures and the linkages to other structures in the operating environment was constructed. The theoretical structure in figure 1 below was the basis for the system linkage analysis of the structures under review.

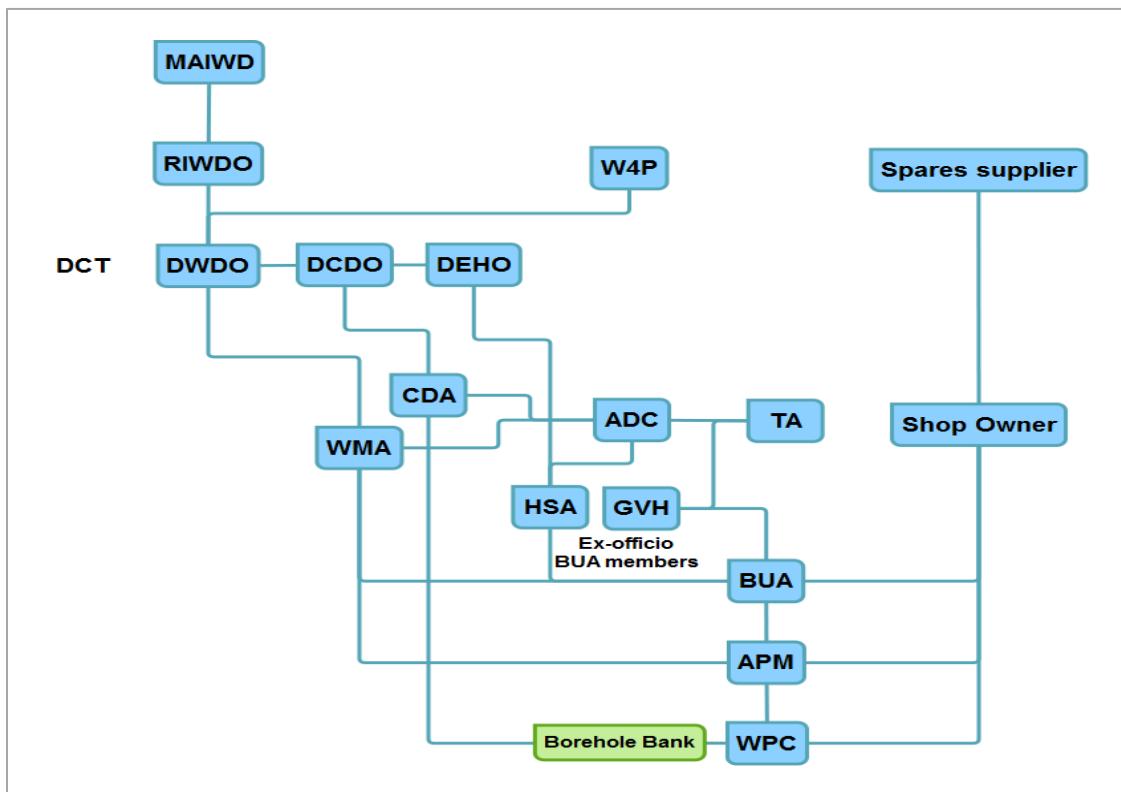


Figure 1: General system map of the WASH program under W4P intervention in Chikwawa district

2.2. Field Data Collection

Techniques such as Key Informant Interviews, Focus Group Discussions and Household Survey were used during data collection. Key stakeholders consulted include; W4P staff, District staff, BASEDA staff, BUAs, WPC/BBs, APMs, Shop Owners and a few Households around each Water Point.

- The *Water for People staff interview questionnaire* was designed to understand the context of the project to help in planning for the field work and come up with a baseline platform.
- The *District staff interview questionnaire* was designed to probe more on their understanding and involvement in the implementation of the project. Emphasis was also put on what successes and challenges they have observed in the project as the government.
- The *phone call interview with BASEDA project manager* in Dedza district was aimed at getting the milestones and other experiences they have had in a similar project being implemented in Dedza district, from which the Borehole Banking concept in Chikwawa was adapted.
- The *APM interview questionnaire* was designed to understand their involvement in the project, benefits, challenges and long-term perceptions towards the programme.

- The *Shop Owner interview questionnaire* was designed to focus on their involvement in the project, benefits, challenges and their long-term expectations or fears towards the programme.
- The *BUA Focus Group Discussions questionnaire* was designed to gather their role in the system, milestones, challenges and their long-term expectations and plans towards the programme.
- The *WPC Focus Group Discussions questionnaire* was designed to gather information about the operation and maintenance of the boreholes and understand their knowledge, perception and benefits from the sustainability structures in their area such as BUAs, BBs, dignified APMs and Spare parts shops (where applicable).
- The *Household survey questionnaire* was designed to understand the households' general economic status, knowledge of the existing structures (BUAs, BBs, Spare parts shops, APMs), benefits they get from structures like BBs, where applicable, and how the Borehole Banks have motivated them to contribute towards their respective water points (Boreholes).

Table 1: Primary data collection matrix

Description of the Method	Description structures to be interviewed.	Data Collection tool
a. Key Informant Interview	Chiefs, members of the WPCs, BBs and WUA (s) APMs & Shop Owners governmental actors such as DWDO staff, DCDO staff, DEHO staff, etc., & other key informants such as Water For People staff, & other NGOs in the area.	DCT, W4P, APM, Shop Owners Questionnaires
b. Focus group discussions.	Members of the local institutions that include; BUAs, WPCs, BBs. Data collected were mainly financial and management capacity of the structures.	BUA, WPC Questionnaires
c. HH Survey	HH Survey focused on social economic data from individual HHs sampled around each sampled Water Point.	HH Questionnaires

The Water Point and Household survey questionnaires were pre-tested in Namwiyo Community, Blantyre and revised by the survey team, which was comprised primarily of the Consultants, the mWater expert, team supervisors and enumerators. See annex 4.3 and 4.4 for the detailed questionnaires.

Actual data collection exercise in the field was conducted over 5 days from 12th to 16th June, 2018. Water Point and Household surveys were conducted by two field teams, each supervised by a Team Leader from Bawi Consultants whereas the Key Informant interviews and Focus Group Discussions with W4P staff, District staff, BASEDA Project

Manager, APMs, Shop Owners and BUAs were conducted by the Consultants (The Lead Partner and the Governance and CBM expert). Table 2 shows the number of interviews/FGDs conducted in the assessment.

Table 2: Number of interviews and Focus Group Discussions conducted in the study

Information source	No. of interviews/FGDs conducted	No. of people involved
Water for People staff	2	3
Chikwawa District staff	1	4
BASEDA staff	1	1
Borehole Users Association	2	21
Area Mechanics	6	7
Shop Owners	6	6
Water Points with BBs	32	32
Water Points without BBs	34	34
Households	380	380
Total	464	488

Data from completed surveys in mWater were analysed in the same and also exported into excel for further analysis while data captured in hard copies were double-entered into excel database by Bawi data entry personnel. Raw data were cleaned, verified and corrected by the Monitoring and Evaluation Manager for Bawi Consultants with the help of the Consultants.

2.3. Sampling Design

A 4-stage sampling technique was employed to finally arrive at Water Points, Borehole Banks and households in the following procedure;

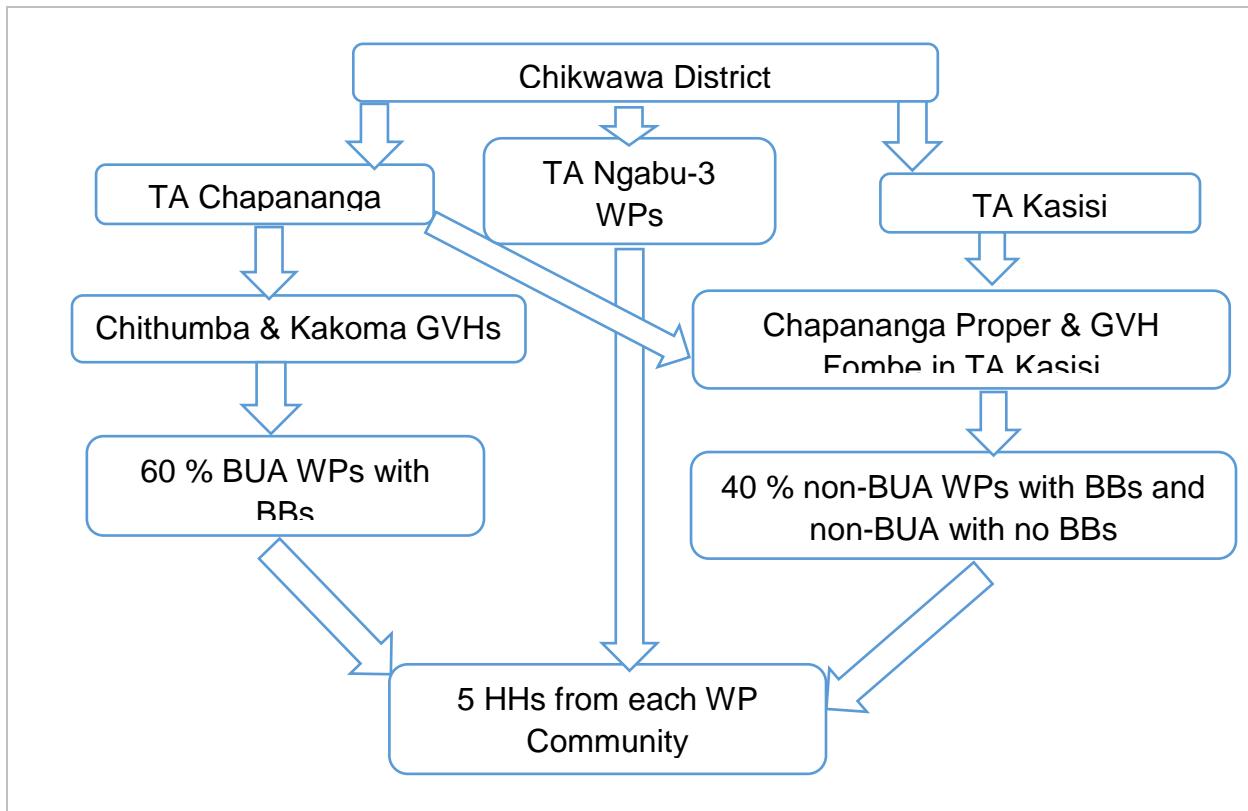


Figure 2: Sampling technique

2.3.1. Sample

The following steps were followed to come up with the sample Water Points;

A list of all 128 Water Points, from the BUA areas of Chithumba and Kakoma of TA Chapananga was compiled. 30% of these 128 Water Points with Borehole Banks in the BUAs was randomly selected, translating into 38 Water Points in total. Noteworthy is also that a 60:40 ratio for the BUA to non-BUA Water Points was used. Hence 38 Water Points from BUAs represents 60% of the total sample Water Points (63 WPs). 25 Water Points represents 40% of the total sample which are the WPs from Non-BUA area, some having BBs (from TA Chapananga) and some without BBs (from TA Kasisi). These Water Points were also randomly selected from the list of the Water Points that was provided. The study also sampled 3 WPs from TA Ngabu where there is no BUA and no Borehole Banks, which was identified as an additional sample by W4P and DWDO staff as a more remote location than TA Kasisi.

The study further did some household surveys to compliment the information that was gathered from the Water Points hence, which involved 5 randomly selected households¹ from each Water Point Community in the sample.

¹ Sample for the households was not calculated using any statistical method as it was determined by the number of Water Points Selected.

2.4. Data collection team

The team comprised 12 research assistants and two consultants. An enumerator training for field work was conducted in the morning hours of the same day pre-testing was done in Blantyre. All the questionnaires were reviewed by the team to make sure that everyone got acquainted to the assignment.

Then, two sub-teams, each comprising of 1 supervisor & 5 enumerators were formed from the team. The two consultants include the WASH expert and the Governance and Community-based Management Expert.

Table 3: Primary data collection responsibilities

PERSONNEL	RESPONSIBILITY
Consultants	Held interviews with the DCT, W4P, APMs, Shop Owners, BUAs and Leaderships of different local structures (both in the BUA and non-BUA TAs).
Supervisors	Assisted in the WP & HH surveys to make sure that enumerators are doing the right thing and submit quality data.
Enumerators	Enumerators were engaged in carrying out WP and HH surveys using mWater platform.

2.5. Data cleaning, analysis and synthesis

Before actual data analysis was commenced, all data were cleaned and synthesized in the following ways;

- Preparation of KII transcripts
- Vetting of data quality
- Triangulation of information between different sources

Thematic analysis was used to establish the main themes and topics arising from the interviews. Basic descriptive statistics were generated from the data that were collected in mWater. Finally, the consultants combined their individual thematic analyses to synthesise the results and collaboratively discussed their meaning and drew conclusions and recommendations jointly.

Data from the BUAs, APMs, Shop Owners and WPC/BBs were analyzed to establish baseline rates of these sustainability structures and to understand key characteristics of these structures impacting on the intended outputs of the intervention. Data provided on communication and information flow systems, technical support linkages and accountability avenues were displayed through the system map to reflect the strengths and weaknesses in the system resilience.

Data from the household surveys were analyzed to understand their awareness, perceptions and benefit they see or get from the structures such as BUAs and the Borehole banks. These data were also meant to give a picture of how Borehole Banks

have motivated the Households to pay the contributions to the Water Points. The other interest in these data was to understand the communication channels by which Households learn about the programs on their respective water points (boreholes).

The statistics are presented mainly as percentages and simple averages and are provided in the tables, graphs and figures of this report. Statistical significance of results was not calculated. This report presents the findings of the assessment.

3.0. Results and Discussion

The TORs required the consultants to come up with a baseline as well as an assessment of the effectiveness of the structures under review and the way forward.

3.1. Baseline data of the structures

The baseline indicators described below are not the only ones used in this study, but represent the core indicators that Water for People may consider in the future to measure effectiveness/improvements over time.

As overall indicators of effectiveness of the maintenance model (considering all structures at once), the study looked at the functionality status at the time of the survey, as well as the approximate number of days of pump down time over the last year.

Table 4: Indicators of effectiveness of the maintenance model

Overall Indicator	Method	Rationale/What is it measuring?	Baseline reading
Functionality status of boreholes	Survey	A snapshot of functionality provides the current functionality status and can be monitored for an increase over time.	Fully functional ² - 54.5% Functional with minor problems ³ - 40.9% Non-functional ⁴ - 3%
Number of days of pump down time in the last year	Survey	Is the functionality rate increasing/at an acceptable level? Are communities accessing water from the point for more days out of the year?	Average pump down-time due to breakdown (excluding outliers): 2.14 days At least 93 breakdown instances recorded for 66 BHs over last year Approximately 199 days of collective pump down-time across sample over the last year

In addition to these overall indicators, the following core indicators in table 5 may be used in the future to measure the effectiveness or the progress of each of the structures within the maintenance model.

² Water Points that had no issues with water flow at the time of the survey.

³ Water Points that were functional but had some minor problems (e.g. worn out centralizers) that negatively affected water flow at the time of the survey.

⁴ Water Points that were found without water flowing for more than a week at the time of the survey.

Table 5: Core Indicators for each Structure

Structure	Core indicators	Method	Rationale/What is it measuring?	Baseline reading
WPCs	Activity level of WPC	WP survey	The effect of interventions on WPC activity- are there people available to actively manage the water point	Active ⁵ - 77.3% Partially active ⁶ - 21.2% Inactive ⁷ - 1.5%
	Average amount of cash saved by WPCs for O&M (cash and in circulation)	WP survey	Are the savings at an adequate level to consider O&M costs? Are overall savings increasing?	K 81,607
	The savings of BBs in terms of cash on hand available	WP survey	Are the BBs actually increasing funds available to finance O&M?	K 45,964
BUAs	Amount of savings of the BUA	BUA interview	Are the savings of the BUA amounting to enough to service large repairs for multiple water points? Are the savings increasing?	Chithumba - K 77,640 Kakoma - K 149,000
	Number of paid-up members against total number of members	BUA interview	Shows buy-in and level of scale	Chithumba - 42/68 (61.8%) Kakoma - 33/56 (58.9%)
	Number of repairs conducted over last year	BUA interview and WPC survey	Shows activity level of the BUA	Chithumba Since inception (2016): 50 Avg. per year: 24 Kakoma Since inception (2016): 15 Avg. per year: 7

⁵ A WPC where all members are able to meet every time they schedule for a meeting.

⁶ A WPC where very few people make it to the meeting every time a meeting is scheduled.

⁷ A WPC that rarely meet even when there is a problem at the WP.

APMs	Average number of repairs conducted over last year	APM interview	Indicates activity level of APM, though in the future if service contracts adopted, number of visits rather than number of repairs will be a more accurate indicator of APM activity level.	Average of 15 repairs per year per APM
	Percentage of WPCs that know of their APM	WP survey	Are APMs known in their areas/active?	Aware- 87.9% Unaware- 12.1%
	Percentage of the WPCs that have had engaged the APM to service their WP.	WP survey	Are the WPCs able to utilize the services of their APMs?	Engaged APM – 65.5% Never engaged APM- 34.5%
	Engaged APM vs. Functionality status	WP survey	Do WPCs that engage an APM experience better functionality of their WP?	Of all the WPs that engaged an APM, 52.6% have functional WPs, and 47.4% have functional water points with minor problems Of all the WPs that did not engage an APM, 57.1% have functional WPs and 32.1% have functional water points with minor problems, and 7.1% are non-functional (3.6% did not respond).
Shops	Stock level of spares	Shop interview	Is the stock level adequate? (where adequate shall mean variety and quantity)	Shops with adequate variety- 83% Shops with adequate quantity- 83%
	Sales records for past year	Shop interview	Are they keeping records/having any sales?	33% of shops are keeping sales records. On average, shops have a range of instances of borehole spares sales between 0-4 times in a month. (for any spare type)

3.2. System Linkage Analysis

The following figure 3 depicts the analysis of linkages amongst the various structures in the maintenance model as determined through qualitative interviews and focus group discussions.

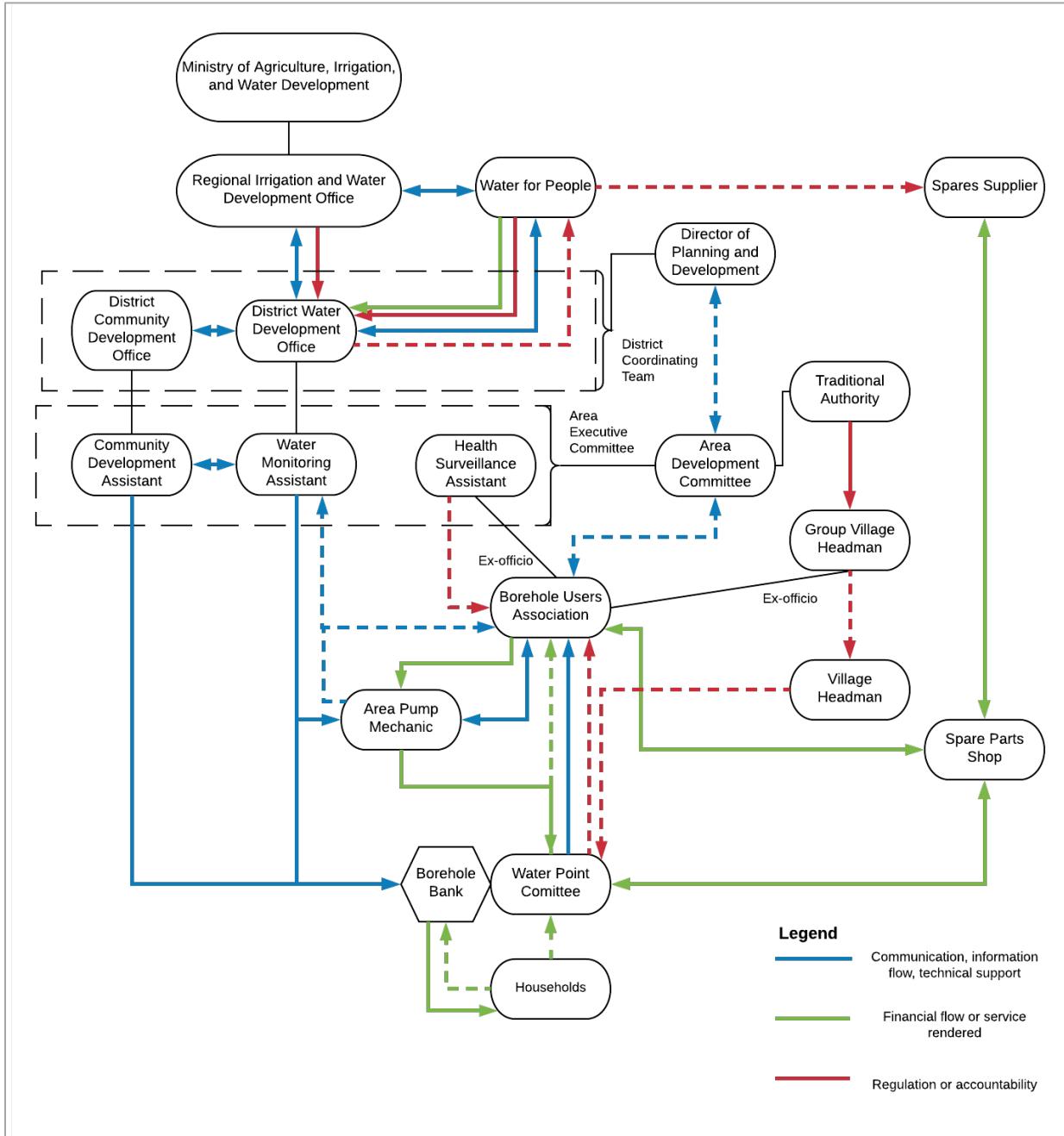


Figure 3: System linkage analysis

Linkage analysis focused on communication/information flows or technical support functions (blue), financial flows or services rendered (green), and regulation or accountability mechanisms (red). Where there is a thin black line that connects the structures, it indicates they are extensions of each other. Where the coloured lines are

dotted, it indicates that the linkage is not strong. Not every possible line was drawn for the sake of simplicity and legibility, however the main insights regarding linkages are captured in the figure and through the following analysis sections.

Key insights on linkages regarding each of the four structures are summarized below.

Borehole Banks

Communication/information flows or technical support functions (blue)	<ul style="list-style-type: none"> - Borehole banks received adequate technical support from the district council in terms of training on the BB concept - Ongoing monitoring of the borehole banks by the district council following training is low - There is low transparency of information from the borehole bank to the community - Low advertising of the concept in the wider community
Financial flows or services rendered (green)	<ul style="list-style-type: none"> - It does not seem difficult for a household to qualify for a loan from the borehole bank, provided they know about it (strong financial flow out of BB to HHs) - Low flow of money back into the BB from HHs
Regulation or accountability mechanisms (red)	<ul style="list-style-type: none"> - Weak accountability through chiefs in most cases - No other source of accountability aside from that provided through collection of collateral which is often not enforced - WPCs may not hold the BBs accountable because they are one and the same

Borehole Users Associations

Communication/information flows or technical support functions (blue)	<ul style="list-style-type: none"> - BUAs have strong communication ties with WPCs - Communication and support lines between the BUA and the APMs is strong, but BUA is the gatekeeper of information and sometimes will choose not to share (eg. responding to a repair request directly instead of calling the APM) - the communication linkage between the BUA and the DWDO is weak- they get information from the ground but it is not passed up to the district
Financial flows or services rendered (green)	<ul style="list-style-type: none"> - BUA normally manages to pay for the services of the APM and for spare parts - BUA struggles to collect funds from member WPCs
Regulation or	<ul style="list-style-type: none"> - WPCs have the opportunity to hold the BUA

accountability mechanisms (red)	accountable through General Assembly, but the BUA does not use this space to hold WPCs accountable or transparent
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Area Pump Mechanics

Communication/information flows or technical support functions (blue)	<ul style="list-style-type: none"> - In areas where there is a BUA, communication regarding repair comes from the BUA and not the WPCs. - In areas where there is no BUA, APMs more regularly communicate with the DWDO. In BUA areas, few APMs still communicate directly with the DWDO - Few APMs are connected to their fellow APMs, but those that are have a strong link
Financial flows or services rendered (green)	<ul style="list-style-type: none"> - In areas where there is a BUA, the payment of services to APMs comes from the BUA and not the WPCs - In areas where there is no BUA, weak collection of fees for service from WPCs - There is a strong link in terms of APMs providing a service to WPCs that request repairs
Regulation or accountability mechanisms (red)	<ul style="list-style-type: none"> - There is no accountability mechanism for WPCs to pay APMs

Spare parts shops

Financial flows or services rendered (green)	<ul style="list-style-type: none"> - Overall, strong payment and goods provision flows- customers generally pay and shops are generally stocked
Regulation or accountability mechanisms (red)	<ul style="list-style-type: none"> - Weak to no regulation of prices from the supplier - What little regulation exists is implemented by W4P and not a permanent institution

These observations on system linkages are cross cutting throughout the following analyses of their performance.

3.3. Effectiveness and performance levels of four key structures under review

3.3.1. Water Point Committees and Borehole Bank Concept

The survey was meant to examine the overall effectiveness of the water point committees in the area of intervention, the impact that the borehole banking concept has had in particular on the functionality of Water Points, the savings available for O&M, as well as the impact of the borehole banking concept on the economic status of the families in the surrounding communities.

Only a few Water Point Committees were able to produce records on request, which makes the validity of the following data subject to the accuracy of verbal reports made during interviews. Also note that quantitative data on default rates was not collected, however conversations were had with each WPC during the survey on their difficulties collecting payback on loans.

a) Capacity of the Water Point Committees and interest in Borehole Banks

Over 90% of the water points reported to have a complete set of 10 active members. About 77 % of the Water Points were found to be active with the majority (86%) meeting at least once in a month.

97% of the water point committees with a borehole bank reported to have received some form of training about borehole banking. The other trainings they received include operation and maintenance of the boreholes and governance. Noteworthy is that all the committees that received training are active.

Of the 78.8% of the WPCs that had heard of the borehole banking concept, only 61.5% of them had initiated a borehole bank (48.5% of all WPCs). Those that had heard about the concept but had not implemented it stated the reason being either that they were waiting for training, or that they were concerned the concept would destroy their savings fund.

In addition, one of the environmental factors that was identified through the study is the widespread salinization in some areas where boreholes have been sunk. This is the main limiting factor on the solidarity and activeness of the WPCs more broadly as well as the borehole banks by association. Households surrounding a water point that produces salty water prefer to go to any nearby water point (if available). In the end, the committees also do not see any meaning of meeting for a water point that people avoid.

b) Impact of borehole banks on Water Point functionality

A majority of the water points surveyed were installed in the last 5 years (71%), resulting in a low breakdown rate, and making it difficult to ascertain whether functionality has been improved by the various maintenance structures implemented. However, analysis shows that the age of the water point only seems to significantly affect functionality if installed prior to 2001 (only 10 water points in this category).

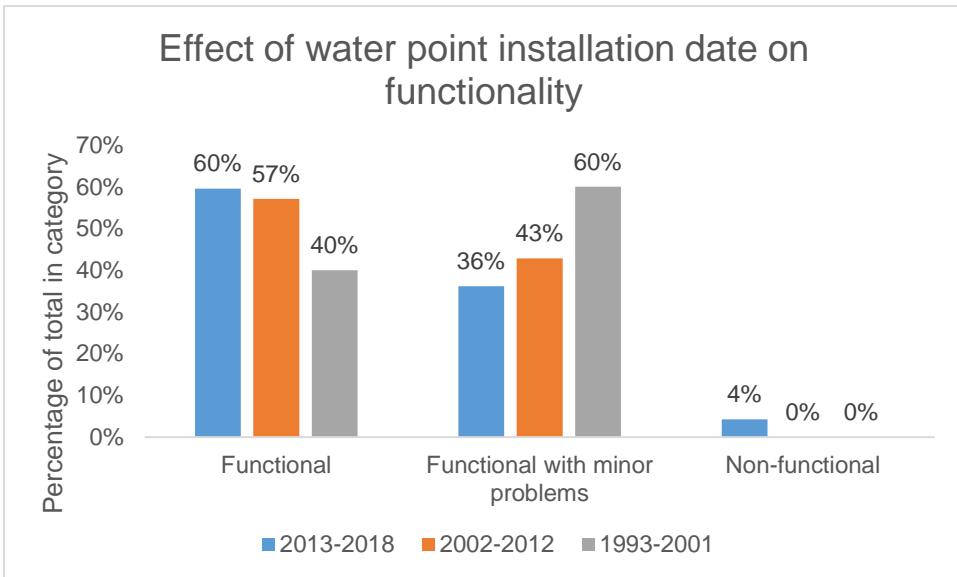


Figure 4: WP functionality vs date of installation

On the other hand, the functionality of WPs seems to be positively affected by the presence of borehole banks, and in fact seems to be a larger predictor of functionality than age of the pump (for pumps installed in the last 15 years).

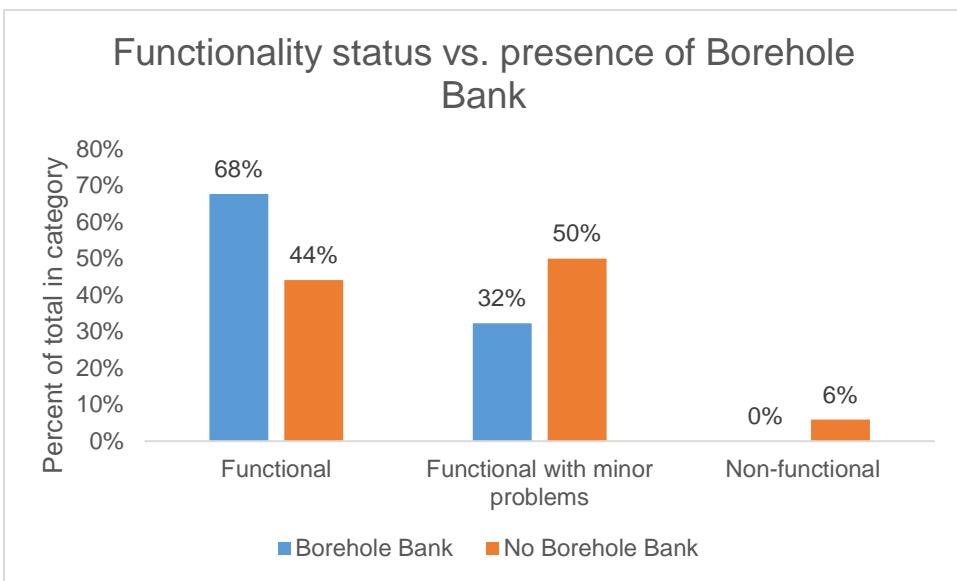


Figure 5: WP functionality vs presence of Borehole Bank

However, this is also hard to say conclusively for three reasons:

- Almost all of the borehole banks were also in areas where there is a BUA, so higher functionality could be attributed to either borehole banks or the BUA;
- The majority of water points with borehole banks are those installed within the last 5 years; and
- Without access to historical functionality data, it was not possible to say whether functionality had increased over time due to borehole banks or not.

This is something that Water for People may wish to measure in the future using baseline data collected during this study (or by using historical data which the consultants were not given access to).

In terms of pump down-time, water points with borehole banks were found to be more prompt in responding to the problems of breakdown at their water points than those without borehole banks. For the Water Points that had some breakdowns in the past 3 months, 4 Water Points without Borehole Banks were found to be unable to cover the costs of repairing while only 1 from the Water Points with Borehole Banks was found in the same situation.

c) Impact of borehole banks on overall savings and cash availability for O&M

All the Water Points visited are managed by the Water Point Committees. Traditionally, the borehole users (community members) are asked to contribute an agreed fixed amount of money towards the borehole repair/maintenance, when need rises. These contributions are paid either per month or per year. 77% including those that have borehole banks reported to still be making contributions towards the boreholes while 23% which are only those that have borehole banks reported to have stopped doing contributions. The reason most of these WPCs gave for having stopped the monthly contributions is that with the money generated through the borehole bank, they no longer felt the need to make what seemed to be additional contributions.

Data analysis showed the average total savings of WPCs using borehole banks to be K81,607, while the average cash on hand to be K45,964. Before starting a borehole bank, 65% of these WPCs estimated to have had total savings of less than K20, 000, while 35% were saving upwards of K20, 000.

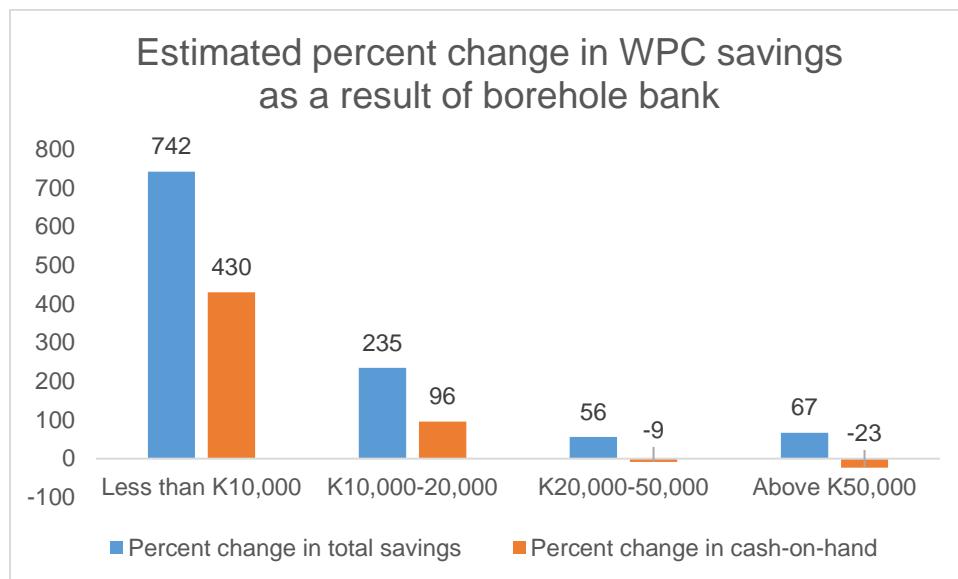


Figure 6: Percentage change in WPC savings and cash on hand with the Borehole Banks

These data show that borehole banking disproportionately benefits those WPCs that were struggling to save more than 20,000 MK in the past, both in terms of overall savings and in terms of cash availability for O&M. However, those WPCs that were already saving more than 20,000 MK before starting a borehole bank saw a more moderate increase in overall savings, and in fact experienced a decline in cash available for O&M at the water point.

For those WPCs that were saving more than K20, 000 prior to the introduction of borehole banks (e.g. were already managing to save money), the introduction of the borehole banks has converted cash-on-hand to cash in circulation, without significantly increasing savings.

These observations show a convergence of savings around an average amount of total savings, rather than a convergence around a certain growth rate. This means that the implementation of borehole banks will increase low savings up to the average savings, but for those that have already saved close to the average, it will primarily convert cash-on-hand to cash in circulation.

Most WPCs interviewed were not stockpiling spare parts beyond a value of approximately K15,000, made up of primarily fast-wearing parts such as seals, rod centralisers, and o-rings. Only one WPC was found to have stocked 2 pump rods in addition to fast-wearing parts, making a total value of stocked spares just less than K30,000. Though these WPCs had converted some savings into spares, they were not WPCs confined to a particular category of savings. This means that we do not expect the lower cash on hand to be primarily accounted for by conversion into stocked spares.

The quantitative analysis of the data excluded 2 outliers of borehole banks which significantly exceeded the average savings realized by the borehole banks. One at Nkosa village with savings of K1,131,000, and one at Gadama 1 with recorded savings of K1,500,000.

A majority of WPCs and households using borehole banks reported having challenges with accountability, often citing diversion of funds (lack of transparency on how the money is used) by local chiefs or other leaders. This observation was also made by the BUA members and the APMs in areas with borehole banks, as well as by the district extension staff. Excluding responses from the household survey (where some respondents indicated the same), over half of the 72 respondents stated through interviews and focus group discussions that their observation is that money loaned out through the borehole banks is not easily paid back, and that the main challenge is with accountability. Many complained that those who were borrowing were not pressured to pay back due to familial or other ties to those managing the fund.

d) Effects of the borehole banks on household income and welfare

Data from the household survey shows that majority (73%) of the households in the study area, depend on farming for their household income. Only 35% of the households depend on business while 44% depend on casual labour for income. Noteworthy is also

that more than 50% of the households reported a monthly income of less than fifty thousand kwacha.

Where there are borehole banks, 89% of households seem to have knowledge of the banks on their respective boreholes. At the time of the survey, 72% of these people reported to have benefited from the banks by either getting a loan or improved services. This figure does not indicate how many households actually paid back to the fund after benefitting from it.

64% of those that have benefited from loan use it for business while 28% use it for their household expenses. Others use the money for paying school fees or hospital bills. The average loan payback period is one month, even though there seems to be no well-defined payback period in most of these banks. This has contributed into making some of the borehole banks doing much better than others.

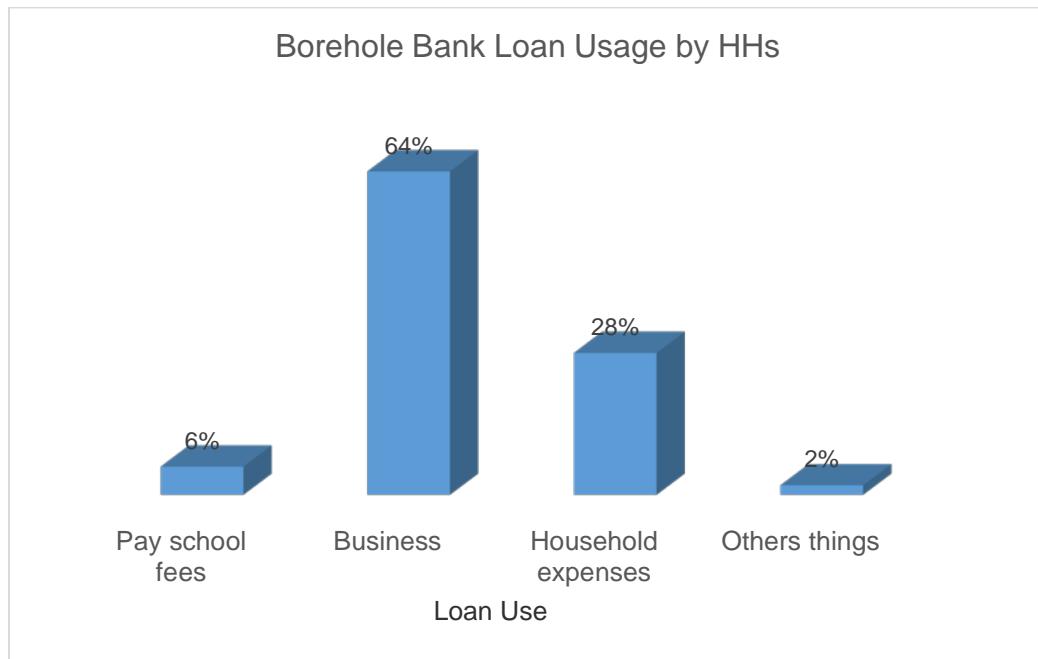


Figure 7: Borehole Bank loan usage by Households

All other things constant, the presence of the borehole banks in the communities has not significantly improved the economic status of the households. This is evidenced from the fact that the trends of the monthly incomes for the households from communities where there are borehole banks and those from communities without borehole banks seem to be of no difference as shown in figure 8 below.

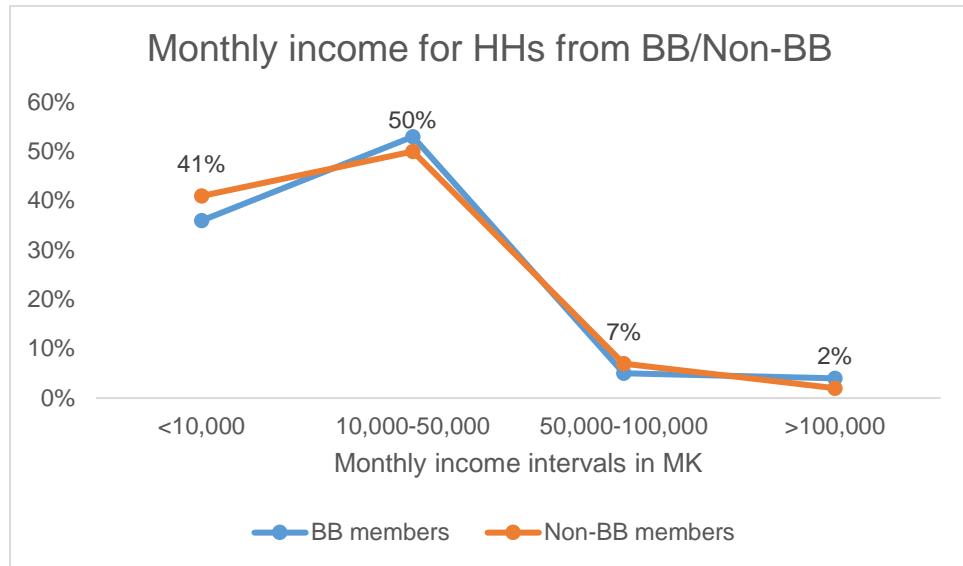


Figure 8: Monthly income for HHs from BB/Non-BB

Furthermore, it was found that penetration of the borehole bank to households in the communities was low to moderate. 42% of the borehole banks interviewed had 10 or fewer members, indicating primarily WPC members as participants of the bank.

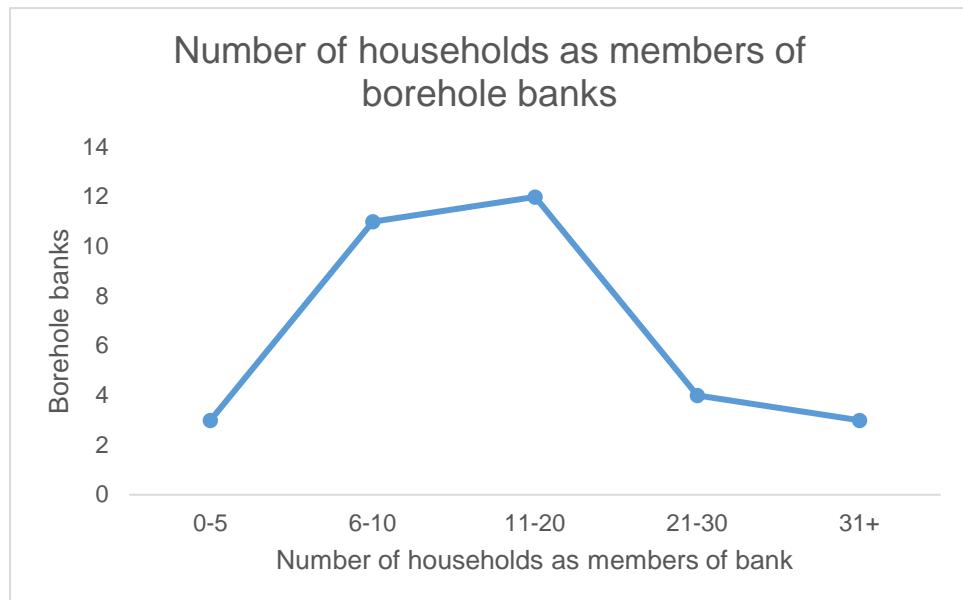


Figure 9: Number of Borehole Bank member HHs

Despite all the trainings and awareness campaigns conducted, borehole banks seem to have not been well publicized to the communities hence many people think that they are not eligible to get a loan from the borehole bank but its rather only for those in the leadership. As by design, most BBs are led by the three core leaders of the WPCs (Chairperson, secretary and treasurer) without involving others from outside the committee, many people feel they are left out of decision making.

e) Summary of overall strengths, weaknesses, and performance factors

Strengths of borehole banks
<ul style="list-style-type: none">❖ The borehole banking concept has the potential to increase savings levels of WPCs, especially of traditionally low-saving WPCs.❖ Borehole banks leverage a source of personal interest (loans) to benefit a public good (water point maintenance fund), where other models lack the aspect that draws personal interest.❖ Data shows that functionality rates of water points in areas where borehole banks have been implemented is higher.❖ The activity level of WPCs seems to be elevated in most cases by the borehole banks, again pointing towards the model's positive effect on the motivations of individuals.❖ The decision to make chiefs ineligible to borrow money from the borehole bank has resolved some issues, though many borehole banks reported that chiefs are still abusing their powers to access loans through other means.

Weaknesses of borehole banks
<ul style="list-style-type: none">❖ Multiple stakeholders including extension workers, BUA members, WPC members, and households, all reported that accountability to pay back the borehole banks is low, leaving most banks incapacitated after the initial rounds of loans.❖ These groups all reported that in most cases the payback issues are primarily with chiefs misplacing the money from the bank, either directly or indirectly.❖ For WPCs that were already good at saving, the introduction of borehole banks primarily converted savings to cash in circulation, which is only a strength in terms of security of the cash if the payback rate is high and the money is recovered.❖ A number of WPCs that had been trained in borehole banking but had not taken up the concept cited the fact that they were worried adopting the model would destroy their existing water point savings. Many of these same WPCs had had success using kitchen gardens near the borehole to grow their savings.❖ Many people felt they could not borrow money from the borehole banks because they don't possess sufficient assets that are required as a collateral in case of a default. The borehole bank committees do not assess the collateral according to the amount being requested. In other words, the collateral seems to be the same for everybody and this deters some that would want small loans from borrowing.

Performance factors for borehole banks
<ul style="list-style-type: none">❖ Accountability mechanisms. The borehole banks work very well where strong accountability measures are in place, usually where there is a strong and responsible chief involved in the follow-up of borrowers. However, the presence of strong chiefs does not seem to be common and were only

- observed as a success factor in a handful of cases.
- ❖ **Penetration of the bank in the community.** The higher the participation of members of the community outside of the WPC, the more the bank emulates a true VSL where rules are observed, collateral collected, etc.
 - ❖ **Interest rate.** Those with lower interest rates as compared to other structures like VSLAs encouraged people to borrow from the borehole bank over other loan structures.
 - ❖ **Payback period.** Those borehole banks with defined payback periods are more likely to collect on loans.

3.3.2. Borehole Users Associations

Two Borehole Users Associations (BUAs) are under pilot in Chikwawa district. Both BUAs were interviewed through focus group discussions during this study. Aspects of membership, revenue generation, repair services rendered, as well as water point functionality in the BUA areas were examined.

Chithumba BUA produced detailed records of their activities and finances, while Kakoma BUA had only partial records available at the time of the interview.

a) Membership and revenue generation

Each of the BUAs has expanded their membership to include all boreholes within their areas that are not abandoned (eg. salty, etc), with the exception of two boreholes in Chithumba that were provided by Islamic Relief and the WPCs view the responsibility of O&M to be under Islamic Relief.

Of the 68 members of the Chithumba BUA, 42 have paid their monthly dues in the last two months. Of the 56 members of the Kakoma BUA, 33 have paid up in the last two months. Over the first two years of operation, the BUAs have collectively generated K1,187,540 in total revenue, of which they have collectively expended K960,900. This translates to 81% of revenue spent. Expenses incurred by the BUAs were either for conducting repairs, administrative costs to withdraw money from the bank, and/or in the case of Kakoma- finishing touches on the office. Current savings for the BUAs collectively is K226, 640 as of June, 2018.

Table 6: Status of the Borehole Users Associations

BUA	Member WPCs	Rate per month	Current savings	Expenditures to date	Annual revenue	Expected annual revenue	% of expected revenue
Chithumba	68	2000	77,640	646,400	362,020	1,632,000	22%
Kakoma	56	1500	149,000	314,500	231,750	1,008,000	23%

Data analysis shows that the Chithumba and Kakoma BUAs are generating 22% and 23% of the potential revenue from the membership, respectively.

When asked why they struggled to collect funds from WPCs, both BUAs cited the borehole banks as a reason why WPCs no longer had funds to willingly contribute to the BUA. This was also corroborated by interviews with WPCs using borehole banks.

The two main reasons cited for this unwillingness or inability to contribute were that either:

- i. There was not enough cash on hand with the WPC to pay the BUA fees, or
- ii. The WPC felt no need to pay the BUA as they perceived themselves to have enough cash to cater for their own repairs without the BUA. This is also supported by the fact that the average savings of borehole banks (K81,607) as well as the average cash on hand (K45,964) are greater than the average cost of repair facilitated by a BUA (K20,967 -- see next section "Repairs facilitated by the BUAs").

The first reason cited also leads us to question whether the cash-on-hand reported by borehole banks is accurate, given that the average was reported at K45, 964 while the BUA fees are only between K18, 000 and K24, 000 annually. This indicates that either borehole banks are simply using "not enough cash on hand" as an excuse not to pay the BUAs when in fact they do have enough cash to pay, or they really don't have that cash on hand.

Another further reason cited by the BUAs for low contributions from members was that they were unable to visit all of the member WPCs on a regular basis due to time and resource constraints, or that the WPCs only have money seasonally. This is also why some WPCs have opted to pay annual fees to the BUA, usually around harvest time, instead of monthly payments. However, annual payments are not common amongst the membership and many of the WPCs on monthly payments do not pay each and every month (making their overall annual payment lower). When asked whether the BUA will still provide a repair service to a WPC if they have not paid up to the current month, Chithumba BUA said that they still provide the service, while Kakoma BUA does not.

Another observation from the WPC survey, is that those that are members of the BUA have high expectations from the BUAs in return for payment of the monthly fees. Member WPCs expect that the BUA should cater for every problem, minor or major, encountered at the WPC once it starts paying into the BUA. This is accentuated by the fact that most of the boreholes in the BUA areas are relatively new and there is no immediate risk of major breakdown in the foreseeable future. Many WPCs whose boreholes have never had a major breakdown do not see any benefit of paying into the BUA as time goes on.

b) Repairs facilitated by the BUAs

Records produced by the BUAs show that the average cost of the repairs they conducted in Chithumba is K12, 928 with a maximum cost of K44, 500, while in Kakoma the average cost for repair was K20, 967 with a maximum of K26, 000.

The majority of repairs financed through both BUAs were for replacement of rods, pipes, plungers, foot valves, and any solvent cement required. The two most expensive repairs were both cylinder replacements conducted by the Chithumba BUA, costing K39, 000 and K44, 500.

Table 7: Repair facilitation by the Borehole Users Association

BUA	Total No. repairs conducted 2016-2018	No. Contracts signed with APMs	Average cost of repair conducted (MK)	Largest single repair cost (MK)
Chithumba	50	41	12,928	44,500
Kakoma	15	15	20,967	26,000

This relatively low average cost of repair shows that BUAs have been involved in the execution of minor repairs of the boreholes that would normally be done by the WPCs themselves. Although this is in conflict with the initial purpose of the BUA to aggregate a fund for use in major repair only, it is likely happening as a result of the pressure on the BUA to show that they are active. Further to the point above, WPCs are already reluctant to pay into the fund without seeing any immediate benefit, and BUAs would like to show that WPCs get value for money by responding to any repair need.

The other reason for this low average repair cost by the BUA is that the division of responsibility for repair between the WPCs and BUAs is based on the type of spare required and not the total cost of repair. This means that a repair involving the replacement of a single rod will cost only about K10,000 but will still be under the responsibility of the BUA because it involves replacement of a rod.

It is also noteworthy that an increasing number of repairs conducted by the BUA in Chithumba are not conducted through an APM. BUA committee members will conduct repairs free of charge without hiring an APM if they feel they can manage without the APM. None of the BUA members have been trained in CBM 2, with the exception of one member of the Kakoma BUA who was trained as an APM before being selected to the BUA. All other BUA members stated that they learned from accompanying the APM and watching how he works.

For example, in Chithumba in 2018, the BUA has conducted only 2 repairs, both of them done without the use of the APM as the BUA members felt it was within their capacity to do the repair. The APM for Chithumba has not conducted any repairs in 2018.

This information has two possible implications, firstly- that the model has created overlapping catchment areas for those that are repairing boreholes from the BUA committee and the APM, and secondly that the quality of the repair service could be lower from BUA committee members that were never formally trained in repair. There is not enough data on BUA repairs done by BUA committee members vs. APM repairs to make this comparison from the quantitative data, however it stands to reason that this

would be a risk- if training had no impact on quality of repair then we would not bother to train APMs.

This piece of information also shows that one unintended outcome of the BUA is the trend over time towards provision of repair services directly from the BUA committee members themselves rather than using APMs, as BUA committee members become more confident in repair through observation.

c) **BUA effect on functionality**

As stated above, it was difficult to attribute higher functionality rates to either the BUA or the borehole banks, as they were implemented in the same catchment areas, and an attempt to take a sample from an area with borehole banks but without a BUA were undermined by poor data provided to the consultants (the area outside of the BUA area sampled had very few borehole banks).

The figure below shows the functionality status of the surveyed BUA and non-BUA member water points. There is a less clear effect of the BUA on functionality of water points than that of the effect of the borehole banks on the same.

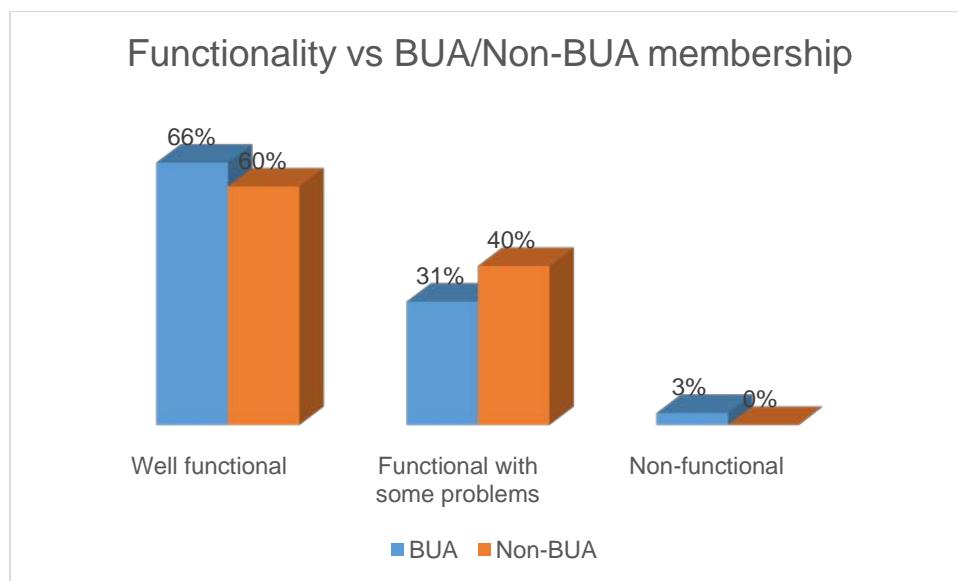


Figure 10: WP functionality vs BUA/Non-BUA membership

d) **BUA committee roles and motivation**

On the one hand, the BUA pilot generated some positive outcomes of , though in areas that were not necessarily explicitly those intended. On the other hand, there is significant duplication of roles and responsibilities that have emerged practically, that in the long term could undermine the sustainability of the other maintenance model structures. In fact, many of the positive outcomes of having piloted the BUA could have been realized through strengthening existing structures, as shown in table 8 below.

Table 8: BUA roles and motivation

Benefit observed from BUA pilot	Observations	Existing stakeholder roles
Faster communication to APM about repair needs in remote area of catchment area	Some APMs indicated that since the BUA started, it has helped in monitoring areas that are further from their place of residence. This is because the BUA relays information it receives from member WPCs.	<ul style="list-style-type: none"> - Instead of requiring third party middle-men for communication, the direct link between the APM and the WPCs could have been strengthened. Where there is benefit in monitoring through a group, APMs could also form a group and reap the same benefit of faster communication. In fact, we saw this benefit even from APMs working in pairs. Furthermore, improving the marketing and communication skills of the APM, reducing the size of the catchment area for the APMs, linking APMs to each other for faster communication of issues, etc., could all have the same benefit. - Additionally, the DWDO could explore a flagging system for repair, such as through a toll-free hotline, piloting the use of remote sensors, etc., to improve monitoring of more remote locations.
Immediate payment of APMs from BUA funds instead of waiting for WPC to pay	APMs under the BUA saw improvements in the timeliness of payment for repairs, as the BUA paid them immediately rather than having to wait for WPCs to pay.	<ul style="list-style-type: none"> - Introducing preventative maintenance or “service” contracts could also improve the timely payment to APMs as they collect payment in lumpsum for the year, and can be collected once during harvest time. These funds are also collected in advance of an actual repair. - Other structures could help facilitate timely payment of APMs, for example district extension workers who are not members of the community and therefore can hold WPCs accountable in cases where they fail to pay.
Repair services directly provided (unintended outcome)	BUA committees have been providing regular repair services without engaging the APM. The benefit to the communities is that the labour is free.	<ul style="list-style-type: none"> - APMs would normally conduct regular repairs beyond the capacity of WPCs. Having BUA members do it for free not only undermines the APM's activities but introduces unskilled labour into the equation- and if BUAs were to be trained in CBM 2 then they would essentially be APMs!
Monitoring of WPCs	Having WPCs networked under a	<ul style="list-style-type: none"> - If APMs were better networked and linked to the DWDO, monitoring of

	BUA has at least marginally improved the monitoring of WPCs	WPCs could be improved. - Strengthening the government linkages to these structures for monitoring.
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In addition, one major intended role of the BUA was to grow a maintenance fund that could cater for large-cost repairs or capital maintenance costs. This is one role that is neither well-covered by existing structures, nor is the BUA realizing much success with growing a fund. However, the introduction of borehole banks was meant to cater for large-cost or capital expenditure, and the average savings they have at one borehole bank (average savings of K81,607, cash on hand K45,964), is similar to the cash available at the BUA (average savings of K113,300, cash on hand K56,320). The rate of major repairs required that cost more than the average savings of a borehole bank is very low, and has not even occurred in the 2 years of operation of the BUA.

In terms of motivation, the BUA committee members seem to be motivated primarily by personal financial gain, emphasizing on the need for salaried positions as committee members in the interview. During the consultant's visit to each BUA, several members mentioned the need for more financial support as BUA committee members, and a lot of time was spent arguing for an increase in the allowances provided at meetings.

In short, the volunteer model has not been well-embraced by the BUA committees, which makes the sustainability of volunteer leadership questionable. This is in part due to the expectations of the members who felt misled by having gone through an interview process to obtain their positions in the BUA, meaning that their expectations right from the beginning was that they would be paid. The BUA committee members see themselves as operating primarily under Water for People. One BUA committee member even asked near the end of the interview whether anyone saw any future in the BUA itself.

e) ***Summary of overall strengths, weaknesses, and performance factors***

Strengths of BUAs
<ul style="list-style-type: none"> ❖ When APMs are contracted by a BUA, it ensures they are paid for repair services, as the BUA pays the APM from pooled funds instead of the individual WPC. ❖ BUAs are able to inform APMs of repairs needed in areas far from the APM homes in more timely fashion because of the additional monitoring support through BUA. We see the same benefit in non-BUA areas from APMs working in pairs. ❖ The BUA are working under and with the existing structures such as the Areal Development Committees in the implementation of their activities. This has seen chiefs being used in resolving some of the challenges that have been faced by the BUAs.

Weaknesses of BUAs

- ❖ The BUA is in some cases undermining the APMs when conducting repairs for free instead of contacting the APM.
- ❖ The BUA fee collection is not resulting in a large fund for major maintenance because fund collection is low and where funds are available they are primarily spent on minor repairs.
- ❖ There is little to no direct or immediate benefit for WPCs to pay into the BUA fund, which is the major roadblock for WPCs to pay into the fund.
- ❖ Many WPCs whose boreholes have never had a major breakdown do not see any benefit of paying into the BUA as time goes on.

Performance factors for BUAs

- ❖ **Past experience with the BUA.** Where the BUA has failed to respond in the past, WPCs are no longer willing to pay into the fund, citing past failure of the BUA to perform. The opposite is also true, where WPCs have had a problem that the BUA responded to they are more likely to start/continue to pay into the fund.
- ❖ **WPCs existing savings level.** Where WPCs have larger savings they do not see a need to pay into the BUA. The most common example of this cited by BUAs and WPCs is areas where there are borehole banks are less likely to contribute.
- ❖ **Existing arrangements between WPCs and APMs.** Where APMs are already well-known by WPCs, WPCs are likely to contact the APM directly if they are not paying into the BUA. This is also because they know the APM will respond to the problem even for partial payment and the frequency of breakdown is less than monthly, which is the payment schedule for the BUA. Furthermore, if they have not been paying into the BUA they are unlikely to be assisted if they contact the BUA when a problem arises.

3.3.3. Area Pump Mechanics

Seven Area Pump Mechanics were interviewed from areas of Chithumba (F. Gobede), Kakoma (H. Guta), Chapananga proper (P. Simoni), Kasisi (S. Simenti, R. Zande), and Ngabu (T. Mlinganiza, W. Khuleya).

a) Repairs, maintenance, and monitoring conducted by APMs

Over the last year, the APMs interviewed repaired, on average, 15 boreholes per APM. Contracts for repair were only signed when in the presence of a BUA, otherwise agreements were verbal.

Figure 11 shows that of all the WPs that engaged an APM, 68% have functional WPs, and 32% have functional water points with minor problems, and 0% were non-functional. Of all the WPs that did not engage an APM, 57% have functional WPs, 39% have functional water points with minor problems, and 4% are non-functional. This data highlights that although engaging an APM ensured 100% functionality (no non-

functional water points in this category), it did not significantly impact overall pump health.

Functionality of the WP vs APM engagement/Non-engagement

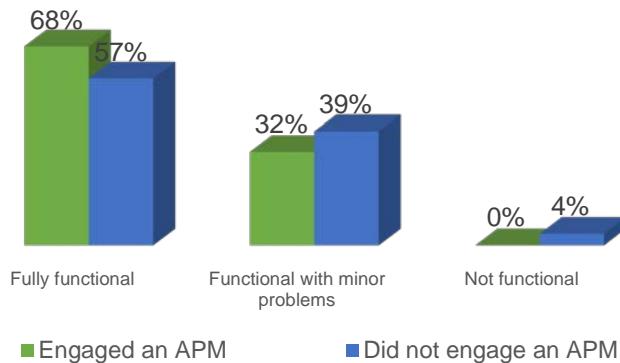


Figure 11: Functionality of the WP versus APM engagement/Non-engagement

As indicated in the borehole bank analysis, the age of the pump did not significantly impact the functionality of the pump, except in cases where the pump was older than 15 years, whereby there was a higher probability that the water point would be functional with minor problems. Therefore, pumps older than 15 years were removed from the data set for the analysis done in Figure 11 above.

Some APMs also act as an advisory service to WPCs, whereby if they receive a call they can talk the WPC through the challenge over the phone instead of traveling to the location of the WP.

Five out of the seven APMs interviewed claim to regularly submit reports to the DWDO. The APM in Chithumba reports only to the BUA. APMs in the areas where BUAs have been instituted have seen increase in monitoring ability through the activities of the BUA. Where in the past they may not have found out about a repair needed at a far end of their catchment area, the BUA has been able to alert them.

Though there were a few noted instances of APMs assisting each other when they needed help, there was only one pair of APMs (at Ngabu) that were working as a team. They monitor in their own catchment areas but when there is a repair to be done they work together.

Catchment areas for the APMs interviewed ranged from 13 to 152 boreholes, with the average being 82 (excluding the min and max from analysis), and with a longest travel time reaching between 2.5 and 3.5 hours by foot/bicycle. Because of the low frequency of repairs needed (APMs on average would have to conduct 1 repair every 1 to 2 months), the APMs did not recommend to shrink the catchment area to less than 50 water points (as this would also reduce business) but to introduce some form of support for transport. Some catchments are still simply too large, such as the area for T.

Mlinganiza which is 152 boreholes. These large catchment areas also leave some gaps. For example, in the Changoima area there are many WPCs that are using an unofficial APM (E. Lipenga- 0881282455) who has never received training.

b) Financial viability of APMs as a business

All of the APMs interviewed did not view their work as an APM as a business, and in fact gave this advice to anyone considering becoming an APM- that they should be prepared for volunteer work. Fortunately, all APMs interviewed expressed their willingness to accept this volunteer work for the good of the community, and said that when they do receive something little from the communities it is still appreciated. 6 of 7 APMs interviewed indicated farming as their only other source of income, while one APM also had a small grocery in addition.

The APMs interviewed estimated that on average, they receive payment for only about 50% of repairs they conduct directly for WPCs, and in those cases only about 30% of the total amount charged is received. Notably for those APMs working under a BUA, if the contract is signed by the BUA then they receive full payment from the BUA.

c) Consumer satisfaction

Most Water Point Committees showed satisfaction with the services from the Area Mechanics they work with. Data from the Water Point survey (figure...a) show that 39% of the WPCs rated the Area Mechanics ‘excellent’, 47% ‘very good’, 8% ‘good’ and only 5% rated APMs to be ‘fair’. Figure ...b show that out the total Water Point Committees that once engaged an area mechanic and at the time of the survey had their water points well functional, only 4% rated them ‘fair’ with the majority (50%) rating Area Mechanics ‘excellent’.

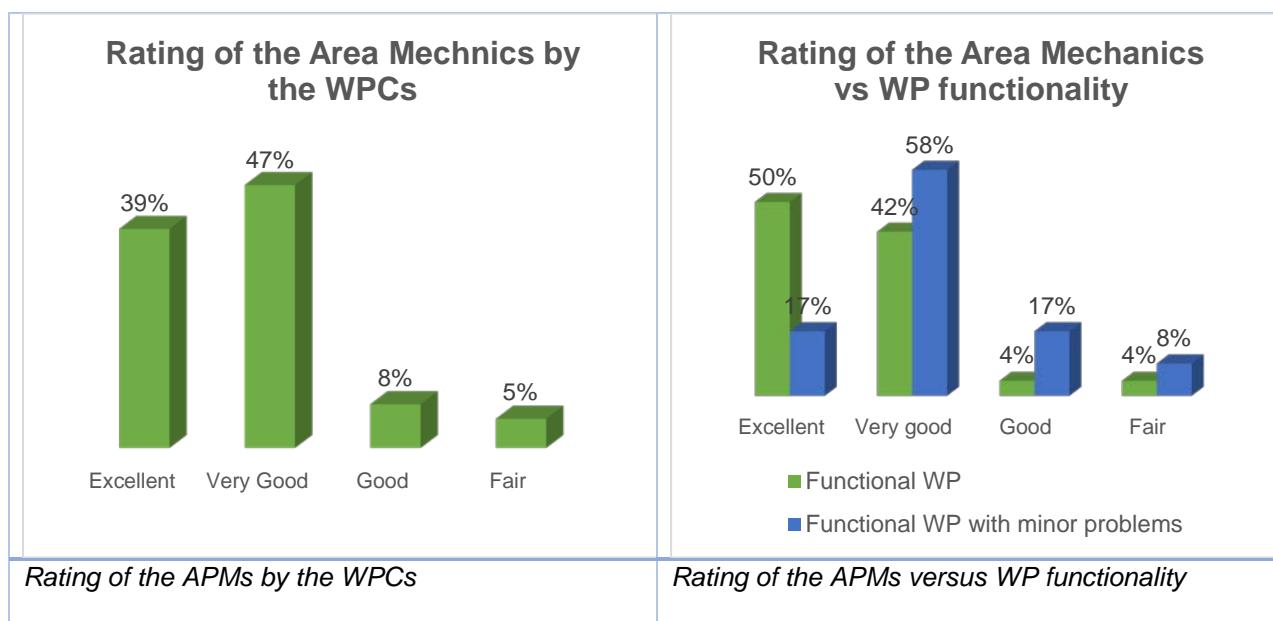


Figure 12: Consumer satisfaction with the Area Mechanics

d) Summary of overall strengths, weaknesses, and performance factors

Strengths of APMs
<ul style="list-style-type: none">❖ APMs have proven to be active for many years, some started 10 years ago.❖ Most are well-known as APMs in their areas and are trusted by communities.❖ APMs are willing to remain active in the spirit of community service, despite the low business incentive- this points to strong selection criteria used in the first place.❖ Most APMs are willing to report to the DWDO of their own initiative, even if not approached by the DWDO.❖ High capacity for repairs, even without appropriate tools (innovative). Have rarely needed to ask for external support to conduct a repair, indicates strong training and mentorship.

Weaknesses of APMs
<ul style="list-style-type: none">❖ Collection of payments is low from communities, they expect APMs to provide the service free of charge as community members. This in turn undermines the APMs' financial ability to support their business such as maintaining bicycles or purchasing tools once worn out.❖ Where payments are collected from the BUA they are at a set rate that often does not cover the actual cost of the service.❖ Mostly responding to immediate repair needs that arise, not much practice around preventative maintenance.❖ Reporting to DWDO is limited and is not guided by any template or request, entirely driven by the few APMs that decide to report.❖ Area Mechanics are sidelined by the BUAs where the BUAs are directly involved in the repairing of the boreholes.

Performance factors for APMs
<ul style="list-style-type: none">❖ APMs working in pairs were doing well through better coverage of monitoring and then working together to repair.❖ Community service motivation. Those motivated by community service did better than those motivated by making money.❖ Connection to DWDO. Those with a connection to the DWDO felt they had a duty to uphold and were motivated to report, and were usually those who were located closer to the BOMA.❖ Presence of BUA. The presence of the BUA sometimes undermined the activity of APMs in the same area.

3.3.4. Spare Parts Shop Owners

Interviews were held with seven spare parts shop owners in the areas of Chithumba (Z. Chibwe), Kakoma (F. Mindozo), Ndakwera (A. Chileka), Chapananga proper (L. Banda), Changoima (K. Mtseka), Chipwaila (L. Shumba), and Maseya (W. Mbitchana).

At two of these shops we did not find the actual owner, but the wives of the owner who were minding the shops (at Ndakwera and at Changoima).

a) Stocks and record keeping

Almost all shops had adequate variety of spares available of both fast-wearing and larger parts, with only one shop seeming to only stock fast-wearing parts. Six out of seven shops were found to have adequately stocked parts. One shop had not restocked plungers and stated that they will in the future, reasoning that they may not go all the way to town just to restock one part. Only 2 shops kept current sales records through use of receipt books, although most had kept records in the past but had stopped, citing low volume of sales.

Some shop owners referenced low capacity of the one minding the shop in their absence, particularly on literacy levels/ability to keep records and knowledge about spare parts. For the two shops that we found where the wives of the owners were minding the shop, they also expressed that it was the husband who had gone for training even though they are the ones who are most often found at the shop.

At trading centers, there were sometimes other shops that had started to sell spare parts that WPCs would prefer to use because they were selling at lower prices, however the shops interviewed said this was because those other shops were selling inferior or lower quality spares.

b) Sales and financial viability of shops

On average, shops had a range of instances of sales of borehole spares between 0-4 times in a month for any spare type, sometimes going more than one month without selling any stock. It is for this reason that all shops stated that if they were to only sell spare parts they would not survive as a business.

By design, most shops combined the spares business with other merchandise such as groceries or spare parts for bicycles, and at the trading centers the shops were also selling spare parts for motorcycles and one even had a small barber shop attached. Others were also farmers in addition to the spare parts business. This is a very welcome platform for the sustainability of the borehole spare parts business considering its delicacy as a stand-alone business.

Of those shops that sold other types of goods, borehole spare parts were consistently ranked as the slowest-selling commodity with the least profit. When asked why they continued to sell borehole spare parts, most answered because of the desire to help communities to have safe water, while others also responded that it was a niche market as they were the only shop selling borehole spare parts in their area.

Some shops also complained that the “special prices” arranged with the supplier through Water for People are not always honoured, even if they present their ID cards to the supplier. Some shops report having been told during training not to raise prices for the communities, so they struggle to make profit when the supplier raises prices.

Other shops that are further from the trading center will be slightly more expensive than other shops because they calculate transport costs into price, this sometimes drives WPCs to other shops that are farther away from their area but closer to town, just to save a few kwacha on the purchase price (those WPCs also noted this fact, saying the shop in their area was expensive).

Lastly, another major challenge facing the shops was the issue of selling spares to WPCs on credit. All of the shops mentioned that they sell parts on credit to WPCs that cannot afford the cost at once, but that once the borehole has been repaired the WPCs are unlikely to pay up, some taking months to pay back or failing altogether.

c) Consumer satisfaction- Shops

From the WPC point of view, the study found that 79% of the Water Point Committees visited have knowledge of the existing spare part shops in their localities and 85% of these water points have once bought spare parts from these shops. Figure...shows that 85% of the water points that once bought spare parts from the shops are satisfied with both the costing (though a bit higher) and services (because they are sometimes allowed to buy on credit).

For the 15% that were not satisfied, the reason cited was primarily that they perceived the cost of spares to be too high. However, in investigating the prices at the shops, no shop was selling spares markedly above market price, indicating this to be only a perception held by WPCs.

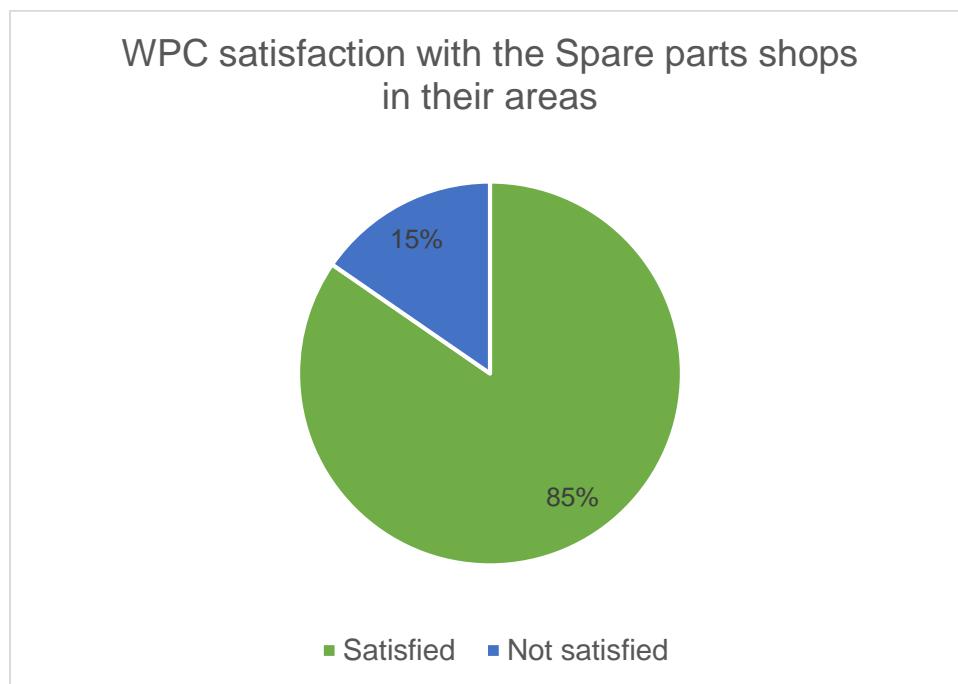


Figure 13: Consumer satisfaction with the services of the spare parts shops

d) Summary of overall strengths, weaknesses, and performance factors

Strengths of shops
<ul style="list-style-type: none">❖ As shops were selected so as not to be reliant on spares for business, they are resilient to low spares turnover.❖ Some shops have been around for over 5 years, and all shops interviewed said they would like to continue with the spares business.❖ The shops interviewed were well-stocked for the most part, making them a reliable source for spares locally.
Weaknesses of shops
<ul style="list-style-type: none">❖ Shop training focuses on shop owners and leaves out primary/secondary shop keepers, or those that are usually left to mind the shops.❖ Record keeping is not common at the shops.❖ The link to the spares supplier in Blantyre doesn't seem amiable, negotiation power for shop owners is low.❖ Shops that try to account for transportation costs in prices are penalized by communities going elsewhere. This makes it more difficult for the more remote shops.
Performance factors for shops
<ul style="list-style-type: none">❖ Lucrative primary businesses. Those shops that had more lucrative primary businesses were able to relax about low volume of sales of spares. It also meant that they could make multi-purpose business trips into Blantyre and were therefore more likely to stock spares in a timely fashion.❖ Shop density in the area. Low shop density is best for longevity of shops, as the presence of other shops selling spares in the area dilutes the business (already low turnover of parts). The low shop density also led many shop owners to indicate that the sale of spares was a niche market for them, which was motivating.❖ Proximity to supplier. The shops that were located closer to Blantyre were able to set marginally cheaper prices, and planning to restock in Blantyre was less of a hassle. On the whole, most of Chikwawa district has direct access to Blantyre, so this may only be a larger consideration if moving into other districts that are further afield.

4.0. Key recommendations to leverage strengths and to address weaknesses of the structures under review

The following recommendations combine leveraging the relative strengths and mitigating for the weaknesses analyzed for each structure under review. Overall, the lens through which recommendations on the way forward were made was that of sustainability- what would make these structures both effective and resilient.

4.1. Borehole Banks

The major challenge with borehole banks was with accountability mechanisms, and the biggest success of the banks was in helping those WPCs that struggle to save money to increase their savings up to the average savings. The following two recommendations build on these observations.

4.1.1. Re-examine accountability lines and how they could be strengthened

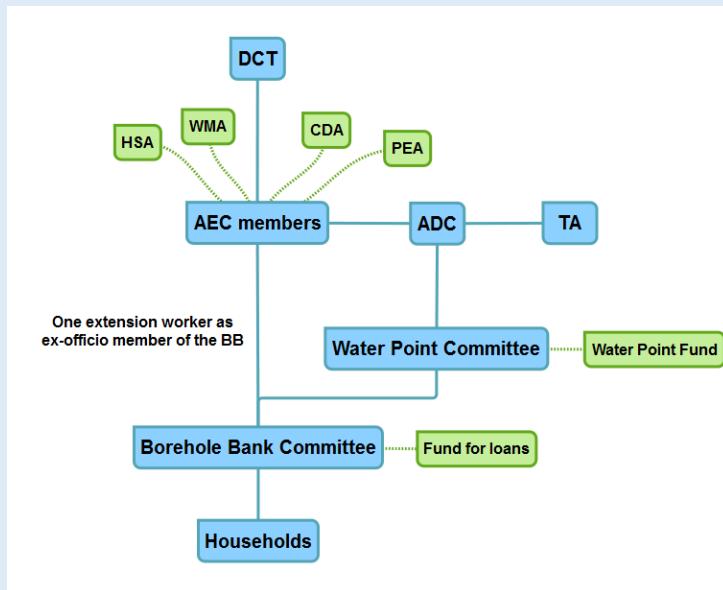
The borehole banking concept should continue but only once the question of accountability mechanism has been addressed. Once there is an agreed upon strategy to address accountability concerns, then communities that meet the accountability criteria may be trained in borehole banking.

Considerations for implementation

a. Existing borehole banks

In areas where the current borehole banking model has already been started, changing the model completely would confuse people and possibly undermine trust. In these areas, action by the district council is required to reform the management structure of the existing borehole banks:

- Re-form the borehole bank committee to be comprised of 5 elected community members that are not part of the WPC, and appoint a member of the AEC (WMA/CDA/HSA/PEA) as an ex-officio member of the borehole bank committee.
- WPC members shall not be members of the borehole bank committee. The borehole bank committee shall report to the WPC.
- The seed funds for the borehole bank are still originating from the WPC savings. These two structures will need to meet at regular intervals, which can be facilitated by the ex-officio member.
- The WPC will be responsible for making sure a minimum cash-on-hand balance is kept with the WPC for use in O&M of the water point.
- Each borehole bank should report their finances at the VDC/ADC meetings.
- It was noted that where accountability issues arise, involving the Traditional Authority of the area can be useful in resolving conflict. However, making the TA an ex-officio member of all the borehole banks in the area would be unreasonable (too many banks).
- Continue the practice of prohibiting chiefs from borrowing from these borehole banks.

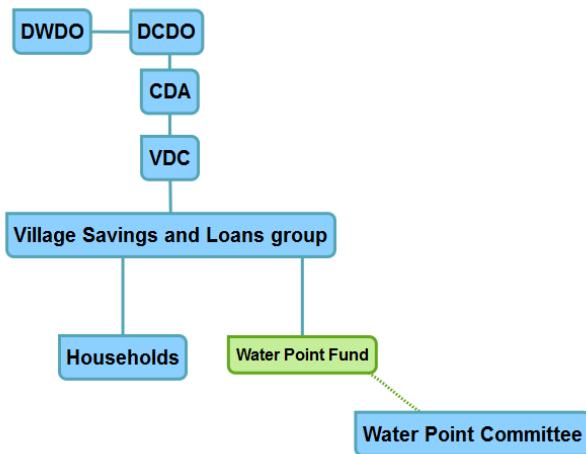


b. Expansion of the concept to new communities

The original VSL model as implemented in Dedza by BASEDA does not seem to suffer from major accountability issues, and recognizes the reality that people using borehole banks are primarily concerned with making profit, and not the welfare of the borehole.

Traditional VSLs are also often instituted at GVH level, which gives them the advantage of having management at a level above the village/WPC, there are multiple chiefs involved (lessening the power of any one of them to divert funds), and there is the potential for multiple boreholes to be members of the same bank. We recommend that for expansion of the borehole banking concept into new communities, the model from Dedza be used with some modifications:

- Take advantage of the VSL guidelines used by the DCDO office and start adding one modification- that boreholes may be shareholders. This means that expansion of the concept can be done through the DCDOs regular efforts to set up VSLs.
- In communities where there are regular VSLs already established, encourage the WPCs to enroll the borehole fund as a shareholder. In communities where there is not yet a VSL established, work with the DCDO to introduce the concept of having boreholes as members when first establishing the VSL.
- Unlike in Dedza, make the borehole a paying shareholder of the VSL (eg. uses a part of the existing maintenance fund to become a shareholder at the beginning and cashes out like any other shareholder at the end of the period). This is to avoid the challenge seen in Dedza with the VSL opting to drop the borehole fund during cash-out periods because they were non-paying members at the beginning of the round.
- Conduct a joint review of this concept with BASEDA to understand lessons learned that may be of use in implementing the model in Chikwawa.



4.1.2. Focus on WPCs that benefit the most from the model

As noted in the analysis, the WPCs that benefit the most in terms of savings through implementation of the borehole banking concept as it is implemented now, are those that traditionally struggle to raise funds for the borehole. Furthermore, for WPCs that already had more savings, the concept primarily converted their existing funds available for O&M into circulation, while not significantly increasing the total savings for this particular category of WPCs.

This recommendation may only be applicable if the current borehole banking concept is continued in Chikwawa, as the analysis was based on the current model (i.e if the VSL model from Dedza is adopted, this finding may no longer be the case).

Considerations for implementation

- a. Use borehole banking as a targeted approach, focusing on implementing the concept with WPCs that struggle to save more than K20,000-K50,000.
- b. Implement and monitor a minimum cash-on-hand threshold that the WPC should not lend out, something around K30,000, which is slightly more than the average cost of repairs conducted by BUAs in the last year.
- c. Many WPCs mentioned the savings generated through kitchen gardens/permaculture was easy to manage while still growing the savings incrementally. This is something that could continue to be widely promoted as a simple way of growing the O&M fund available for any WP, regardless of the category of savings they fit into.

4.2. Borehole Users Associations

As the Borehole Users Associations were implemented as a pilot, we are inclined to understand two things from the study- 1) whether the model is worth continuing based

on the relative strengths and weaknesses as described in the analysis above, and 2) if it should continue, what kinds of shifts or improvements must be made to the model to ensure that it serves the intended purpose.

It does not appear to be worth continuing to pursue the BUA model as it was originally envisioned. However, there are opportunities to either transition the BUA to operate as an APM-driven entity (explanation below), or if the decision makers would like to continue to implement the BUA model, there are a number of improvements that could help to lessen the level of current role duplication observed through the systems analysis. There is also a more time-intensive investigation that could be done into harmonization of community water supply structures under WUAs, especially if W4P will be exploring revamping existing WUAs in the district.

In this light, the following are several recommendations under different options on the way forward.

4.2.1. Option 1: Transition the BUA model to be an APM-driven model, and strengthen the DWDO linkages

Rationale

Most of the major benefits seen by the operations of the BUA to-date are related to conducting every day repairs (also the mandate of APMs) and not necessarily the growth of a major repair fund. The activities of the BUA have become focused on conducting repairs regardless of magnitude of the cost. This is also rooted in the fact that there is pressure for the BUA to show immediate value for money to WPCs that pay into the BUA, which is something that APM service contracts⁸ also achieve. Not only do service contracts provide the immediate visible benefit for WPCs to pay, but the payments themselves create the opportunity to indeed grow a maintenance fund where the BUA has failed.

In terms of motivation, APMs would also be more personally invested and motivated to run a structure that benefits their activities as APMs (rather than simply volunteering as the current BUA does). Most of the BUA committee members complained of not receiving any incentive to work for the BUA. In an APM-driven model, the activities of the association directly benefit the APM as an individual. Putting APMs at the heart of the structure would make it market-driven and not as dependent on volunteerism.

The BUA model has already gravitated towards members of the BUA committee conducting repairs themselves directly, cutting out the “middle men” (in this case, APMs). If the BUA committee members were to be trained in CBM 2, this would

⁸ The **service contract** in this case is referring to a preventative maintenance contract model developed by InterAide, whereby a WPC pays an annual fee for the APM to make 4 preventative maintenance monitoring visits to the water point over the course of the year. Under this contract, if a repair is needed throughout the course of the year, it is also covered by the APM. Conversely, the opposite is also true- if a WPC did not initially sign a service contract with the APM but their water point breaks down, then they can enter into a service contract that guarantees the repair at the time of need, and then 4 preventative maintenance monitoring visits over the course of the year following the repair. The cost of spares is not included in the service contract fee, and will need to be covered by the WPC.

essentially make them APMs in terms of skill level, again pointing at the natural fit for an APM-driven model.

Considerations for implementation of an APM-driven model

The following are ideas on how an APM-driven model could be implemented, however a focused study on how specifically such a model should be implemented would need to be done beforehand.

- a. **Service contracts.** Introduce and implement the concept of “Service contracts” for APMs. The rate that InterAide is using with their APMs at the moment is K12,000 per year per WPC. This price does not include the cost of spares, which the WPC is expected to pay for (see service contract explanation above). The cost of service contracts could be reviewed for Chikwawa’s context.
- b. **Transition the BUA to be “APM Groups”** (other title can be used, this is used as a placeholder). An APM Group is a cluster of APMs working in a certain area, that each have their own catchment area.
- c. **Catchment size** for each APM (and therefore the number of APMs in a Group) will need to be decided through further investigation of this idea, however, a sample catchment for Chithumba (68 water points) is outlined below:
 - o **Theoretical catchment assuming 100% subscription rates-** If we assume that the use of service contracts will result in APMs making at least four mandatory visits to each of the WPCs in his/her catchment area in a year, and that we would expect an APM to make not more than 8 visits in a month, then
 - $68 \text{ WPs} \times 4 \text{ visits/year} = 272 \text{ visits/year}$
 $272 \text{ visits}/12 \text{ months} = 22.67 \text{ visits/month}$
 $22.67 \text{ visits}/8 \text{ visits by an APM per month} = 2.8 \text{ APMs needed}$
(round up to **3 APMs**, each with 23 water points in their catchment)
 - o **Theoretical catchment based on current subscription rates to BUA-** Currently, Chithumba BUA has only 22% subscription rate, meaning that only the equivalent of 15 WPCs are paying fully. Though we would expect this APM-driven model to generate more subscriptions over time, at first we would model it on the current subscription rate.
 - $15 \text{ WPs} \times 4 \text{ visits/year} = 56 \text{ visits/year}$
 $56 \text{ visits}/12 \text{ months} = 4.67 \text{ visits/month}$
(Only **1 APM needed** for 15 WPCs in the catchment.)
- d. **Expand the APM group beyond current BUA boundaries.** As only 1 APM does not make a group, the above catchment calculation suggests that the areas for the APM Group should be slightly larger than the current area demarcated for BUAs. This to be done by making clusters of APMs based on their home locations. As subscriptions increase over time, more APMs may be added within the same catchment areas. Further investigation needed to determine exact boundaries for each APM group.

- e. **Link to DWDO.** Ensure a direct link between the APM Groups and the District Water Development Office for monitoring and for motivating the APM groups. The DWDO staff could take the lead in calling APM Group meetings, in collecting reports from the APMs, and in mitigating any challenges that come up in the implementation of the concept.
- f. **Growing a maintenance fund.** With APMs collecting service contracts, there is the possibility to aggregate some of the money at a higher level to grow a maintenance fund. A percentage of each service contract payment could be submitted to the APM Group to be kept as a larger maintenance fund that WPCs could access in the future as the need arises. Additionally, no money would be drained from this fund for minor repair, as the onus of purchasing spares for regular repair is on the WPC.

The exact percentage would need further investigation to determine, however, below is a sample calculation demonstrating the possible viability of a maintenance fund using 25% of each service contract, again looking only at Chithumba BUA catchment area:

$$\begin{aligned}
 25\% \text{ of K12,000 service contract} &= \text{K3000 submitted to the APM group,} \\
 &\quad \text{APM keeps K9,000} \\
 68 \text{ water points} \times \text{K3000} &= \text{K204,000 saved in a year}
 \end{aligned}$$

- g. **Explore an APM Association.** An APM Association could be instituted at district level, above all APM Groups. This should be done primarily if it is decided that the Maintenance fund at APM Group level will not aggregate enough funds and a district-level maintenance fund is desirable (and feasible). Further investigation is needed before deciding whether an Association is worthwhile. It may only add a level of useless hierarchy.
- h. **Collaborate with the NGO InterAide.** Learn from InterAide both about the service contracts and how they have been priced, the pilot on APM clusters and associations that they are conducting in other districts, as well as their approach to strengthening APM networks in general.
- i. **District top-up funding.** Explore developing or linking to a fund through the district council that allows cost sharing between WPCs or the APM Group and the government for large-scale repairs beyond their financial capacity. There is evidence of this type of arrangement happening in other districts such as Blantyre and would only occur every few years. The DPD for Chikwawa suggested that such an arrangement could be possible through the Constituency Development Fund, and sometimes the Local Development Fund.

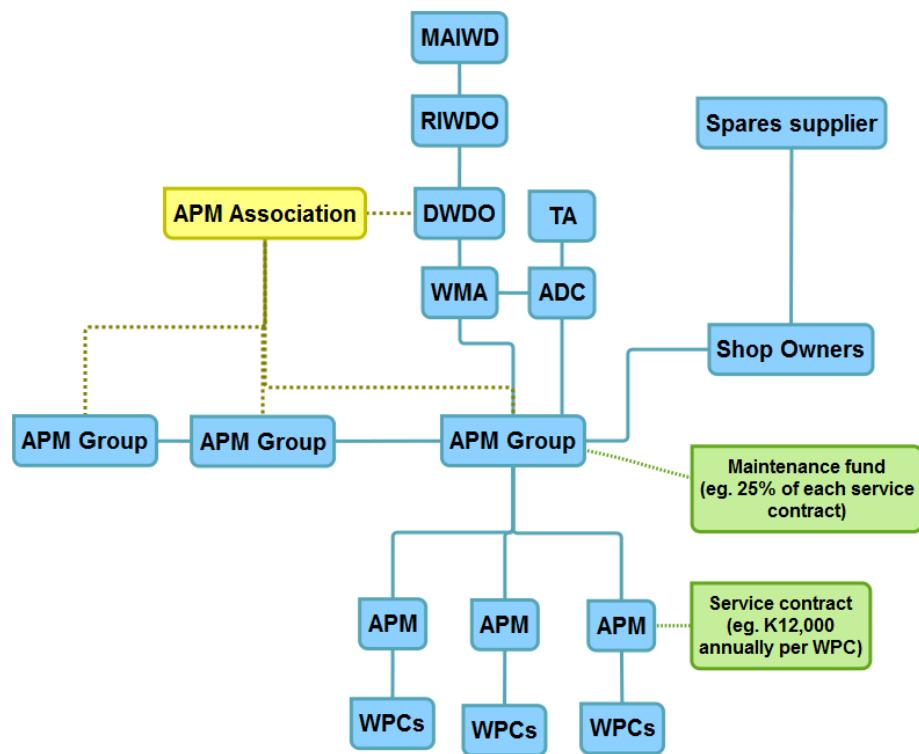


Figure 14: APM-driven model for repair services and growing a maintenance fund

4.2.2. Option 2: Maintain the BUA model where it has been implemented with some modifications

Rationale

As the two BUAs have already been instituted in a concrete way, it may be difficult to transition them to an APM-driven model. In this case, there are actions that can be taken to strengthen the two existing BUAs without necessarily expanding the concept to other areas at this point.

In the areas without existing BUAs, the recommendation to pursue an APM-driven model still applies.

If option 1 is not possible and the BUAs will be maintained in areas where they have already been implemented, then there are a number of areas that need to be improved to ensure they serve the intended purpose.

Considerations for implementation

- BUA members should either be instructed not to conduct repairs without an APM, or be trained in CBM 2 if they will be active in repairing boreholes directly without an APM (although if they are trained in CBM 2 they will be on the same skill level as APMs).
- In order to grow the savings of the BUA for large-scale repairs, the BUA should

only conduct repairs that exceed the average savings of WPCs in their area, in this case exceeding K80, 000. Make it very clear to WPCs that any repair costing less than K80, 000 will be their financial responsibility. Currently the assessment of whether the BUA will conduct a repair is based on the type of spares required. The division of responsibility should be on total cost to repair and not on part type. (Note: the benchmark of K80, 000 was determined using data collected from borehole banks. However, as discussed above, there is need for closer monitoring of the borehole banks to see if they really have these levels of savings, and if in reality they have less than this saved, then this threshold may also need to adjust accordingly)

- c. BUAs should not make any exception for WPCs that have not paid up their subscription fee. No payment, no service.
- d. Instituting the minimum cash on hand policy for the borehole banks (as discussed above) will be important in ensuring there is cash on hand at the WPC level to pay the monthly BUA fees.
- e. For better accountability, make the General Assembly meetings a platform whereby member WPCs are also expected to share financial updates (not just the BUA to its members). Also consider having the APMs present to report any outstanding balances or issues.
- f. Explore some kind of incentive for the BUA committee members to stay active. This is more eloquently addressed through an APM-driven model, but this will have to be addressed somehow in the BUA if they will continue. Further investigation would be needed into how there could be a salary-like structure for the BUA committee members rather than expecting them to volunteer effectively.
- g. Ensure autonomy of BUA activity from W4P and strengthen the linkage between the BUA and the DWDO. For example, if members need to be replaced, the BUA should be able to facilitate that process independently of W4P. Reports on the boreholes and APMs in the BUA area should be passed to the DWDO (currently not happening).

4.2.3. Option 3: Harmonization of community water supply management models under WUAs

Although it is true that WUAs are currently an institution that look solely at gravity fed schemes with communal taps, it is also true that these institutions are struggling financially, yet they may have hundreds of tap committees as members. As we have observed that the BUAs are also struggling financially, it may be worth exploring whether harmonizing these structures in areas where they both exist could help increase revenue and coordination on issues to do with community water supply. The management structure is almost identical between the two structures.

As the WUA that is operating in Kakoma has a line that is dysfunctional, this doesn't seem to be a current option- unless the line will be rehabilitated in the future. It may also be a consideration in the future if the BUA concept will be expanded elsewhere into areas where there is an existing WUA.

This option would be especially relevant if W4P as an organisation will be looking to both continue expanding the BUA model and to start investing into gravity-fed schemes under WUA management.

A larger investigation beyond the scope of this study would be needed to determine whether this concept could be viable.

4.3. Area Pump Mechanics

APMs were generally a strong component of the maintenance model. The APMs interviewed were devoted to their work and this is a testament especially to their selection criteria and the training they received.

Aside from the major recommendation to potentially adopt an APM Association model as described in the previous section, there are some clear recommendations that could improve the implementation of APMs in the district regardless of whether that recommendation is followed.

Considerations regardless of whether an APM-driven model is pursued
<ul style="list-style-type: none">a. Continue to select APMs that are strongly motivated by community service rather than personal financial gain, even while still working to make the APM business model more profitable.b. Continue to provide the same robust level of training and mentorship to the APMs in the future.c. Transition the APMs to work under service contracts, and start including this in the communications to WPCs as well.d. Some catchment areas have too many boreholes and another APM should be added for the area. In particular on the side of the APM T. Mlinganiza, Ngabu, who has 152 boreholes in his catchment area.e. Other catchments areas may be assessed as too large based on the travel times needed to reach the areas, so the issue of transportation may be a more appropriate question to address in such cases than reducing the size of the catchment area. Suggest that each area be assessed on case by case basis.f. In areas where an APM will be added, try to find out which person the WPCs are already using in the area- for example near Changoima they are using a man named Emmanuel Lipenga, who was never trained as an APM. He could be trained to upgrade his skills, as WPCs already know him and use him.g. Where possible, encourage APMs to work together. The case of Ngabu could be highlighted- the way that W. Khuleya and T. Mlinganiza work together can inspire others. It is also more efficient to divide the monitoring but work together on the repairs, as they have done. This also allows for an “understudy” type arrangement whereby if one APM leaves, passes on, or retires, there is another APM that can take on another “understudy.” This is especially relevant as the APMs age, in this study alone we discovered that one APM had passed away, and another had moved out of the district.h. There is need for the linkage between the DWDO and the APMs to be strengthened, which is an area that has already been identified by the DWDO.<ul style="list-style-type: none">o Reporting lines- Not all APMs are currently reporting, but those who do would like a standard report format to submit to the DWDO.

- APM group meetings- Organising regular group meetings does not need to be an expensive task for the DWDO, and both improves the linkage to the DWDO but also encourages peer-peer collaboration amongst APMs.
- i. A fishing tool should be purchased and made available through the DWDO to APMs on loan.
- j. Learn from the NGO InterAide on how to strengthen APM Networks, and in particular their approach to connecting them to ADCs and the DWDO.
- k. Discontinue the practice of providing APMs with fast-wearing spares starter packs. This encourages the perception by communities that they can get things for free from the APMs, and undermines sales of the local spares shops.

4.4. Spare Parts Shop Owners

Through this study it was observed that although they may face some challenges, the performance of spare parts shops is strong. That being said, there were some minor challenges that could be addressed in the future.

Recommendations

- a. Continue to recruit shop owners that have already diversified their business to have many sources of income, and that already have strong business skills of their own.
- b. In many cases, the person spending the most time minding the shop is not the one who went for training. In future trainings (whether initial or refresher), make provision for a deputy shop minder to also attend the training, in most cases this is the wife to the shop owner but could be another delegate.
- c. Focus training even further to prioritize business skills improvement. Retain the aspect of orientation to the Afridev pump, but keep in mind that shop owners need first of all to be good business people before they need to be specialists in boreholes.
- d. W4P and the DWDO should review the agreement made with the supplier in Blantyre that allows the shops to buy parts at a discount, and follow up with the supplier to ensure its enforcement.
- e. As a regulatory body, the District Council should use existing channels to monitor the prices of spares at the supplier versus the shop level (taking into consideration transport costs incurred by the local shops).

4.5. General Recommendations to Water for People on future implementation of programs

Overall, it was clear from the study that the work that Water for People has done in Chikwawa district, both in terms of increasing coverage of water supply and in setting up O&M structures, is commendable. Not only does the data speak for itself, but we heard from many stakeholders their gratitude towards Water for People for bringing water to their area and for investing in their capacity to maintain those structures.

Observations of positive approaches to programming

- ❖ There is strong evidence that W4P works closely with the district council at multiple levels, not only with the DWDO but with other relevant departments, extension workers, and the DCT more broadly.
- ❖ W4P shows an above-average willingness to innovate, to try new approaches, and to learn from what others are doing.
- ❖ The commendable effort by W4P to address both the immediate rural water (infrastructure) needs while also putting emphasis on management, sustainability, and life-cycle costs goes beyond that of the average NGO in the sector in Malawi.
- ❖ The strategic decision to concentrate efforts in a single district to improve service delivery is one that we hope other NGOs could emulate in being focused.
- ❖ The structures W4P is implementing are linked to relevant existing structures such as ADCs, extension workers, etc.

Nevertheless, all programs have areas for improvement. Through interacting with the various stakeholders as part of this study, we have made a number of observations about the way Water for People implements its programs that could be improved in the future.

Recommendations for improvement

- ❖ Implement pilots as pilots. For example, in the case of the BUAs, it may have been pre-emptive to physically build offices for a management structure that is still considered to be under pilot.
- ❖ More planning, stakeholder engagement, and ideation is needed before piloting structures that fundamentally change how the system is set up such as management systems, as they are difficult to reverse once put in motion. New expectations about “the way things are done” are formed at community level which become hard to adjust in the future.
- ❖ Using government staff for implementing activities is only one type of engagement, and does not necessarily promote ownership or integration of activities. Higher involvement and ideation with the local government/DWDO is especially important before launching new concepts, as it increases ownership by the DWDO, it can avoid pitfalls in the idea’s implementation, and can improve integration into regular activities and existing regulatory frameworks, policies, and guidelines. In this case, the DWDO was not sufficiently involved in the development of the BUA concept.
- ❖ Avoid making commitments or making mention of possible benefits to stakeholders before they are certain to be fulfilled. Examples of promises that stakeholders are still waiting on under this project: seed funding for BUAs, BUA office completion, t-shirts, refresher trainings, etc.
- ❖ Avoid as much as possible providing allowances and free gifts to stakeholders as a token for their participation, if in the long term they will still be expected to meet/operate utilizing their own budgets. This practice creates a dependency on project funding and sets expectations from stakeholders that becomes difficult for them to operate later without those incentives.
- ❖ Engage in more targeted learning and sharing with other

organisations/institutions in Malawi that are implementing similar programming. This helps avoid re-inventing the wheel, can shorten the time needed for pilot phase, and can also bring out new ideas for both parties.

5.0. Conclusion

This study investigated the current performance and sustainability of the maintenance structures implemented by Water for People in Chikwawa district, with respect to the milestones achieved, challenges faced, and key threats to the sustainability of these structures. From this investigation, a number of recommendations were made.

In general, there are a number of conclusions that come out clearly from the survey data and field observations. Overall, of the four structures that were reviewed we can say that:

1. **Borehole Banks** are a good approach to ensuring that the Water Points are functional, that the Water Point Committees are active, and that the resulting savings are above the average savings observed from more traditional contribution methods. However, the major threat to sustainability seems to be the accountability mechanisms put in place for the loans to be repaid. This is a threat that seems to be increasing as time goes on, making it more pertinent to address in order to protect the savings generated by the concept.
2. The **Borehole Users Associations** pilot has shown that although there are a number of positive outcomes resulting from the structure, these gains may not justify the effort needed to continue implementing the BUA given that the major purpose of generating a larger maintenance fund has not been realized, the long-term sustainability of the structure through volunteerism is questionable, and there are other stakeholders available to fill these types of roles. The way forward in this case may be to transition the model to one that is APM-driven and uses service contracts.
3. The performance of **Area Pump Mechanics** in the district has been generally high. Fortunately, they have been motivated to stay moderately active for long periods of time on what is essentially a volunteer basis. The injection of motivation that could be realized through the introduction of service contracts as well as a stronger connection to each other and the district council could push their performance to another level, improve preventative maintenance rather than simply reactive maintenance activities, and improve monitoring of water points in the district.
4. Intensification of the **spare parts shops** in the rural areas of the district has greatly impacted on the availability of spare parts at that level and therefore reduced pump downtime. Shops have also shown to be active for longer periods of time, which is promising.

In conclusion, the study confirms that Borehole Banks, Area Pump Mechanics, and spares shops are performing adequately enough to serve their intended purpose, though there are areas for improvement that have been identified. However, the study

revealed that despite genuine efforts, there are structural factors that prevent the Borehole Users Associations from performing on key intended outcomes, specifically the generation of a maintenance fund for capital maintenance, and that BUAs should be transitioned to another model.

6.0. Annexes

6.1. Terms of Reference

1.0 Introduction

Water for People, an international NGO operating in Malawi, working in partnership with Chikhwawa District Council has secured financing to assess the performance and to determine capacity development needs of Borehole Users Associations, Area Pump Mechanics, Borehole Spare Parts suppliers and Borehole banks which have been set up and are working in rural Chikhwawa. The institutions and arrangements have been put in place with the aim of contributing to the sustainability of water supply systems, especially boreholes that have been installed with support from Water For People and other institutions in the district.

2.0 Background

To ensure continued and sustained use of the water infrastructure, Water For People Malawi has been providing support to Chikhwawa District to strengthen and develop mechanisms that contribute to sustainability of WASH investments, in three main ways.

- a. Over the years, the district has established a network of Area Pump Mechanics (APMs) and shop owners in the district who have been trained and supported to be part of the supply chain in ensuring that boreholes are repaired within a short period after they breakdown. APMs are providing services to water point committees (WPCs) through rehabilitating non-functional water points and maintaining functional water points on the verge of breakdown. Shop owners who have been recruited in the program, operate hardware shops in the project location. Amongst the merchandise that the shops sell are borehole spare parts which are sold to WPCs and APMs. Stocking of pump spare parts has strengthened the spare parts distribution chain thereby reducing the down time of the hand pumps or taps.
- b. Under a pilot project, Water For People and the district council piloted Borehole Users Associations (BUAs) that have been set up to provide preventative borehole maintenance services. A BUA oversees the management of a network of boreholes within an area covering one or several group village heads, providing technical support and undertaking major repairs for boreholes for its members, using the subscription fees that the member WPCs pay to the BUA.
- c. In addition, for the last three years, Water For People-Malawi has been supporting setting up of Borehole Banking in its impact areas as one way of providing alternative finance management options for WPCs. Borehole Banking, essentially a Community Savings and Loans Scheme, is a finance management model whereby water point tariffs are converted to savings/shares that are bought and lent out at an agreed interest rate to community members, as a way of both retaining the value of, and building available cash, for a time of breakdown. This arrangement helps generate additional income for the committee, has increased the transparency of tariff management, and ensured funds are readily available when needed.

Since these initiatives have been designed to improve the service levels from boreholes, it is critical that we understand their effectiveness, their performance levels as well to identify areas that require capacity development and adjustment to the models.

Water For People is therefore inviting applications from qualified consultants/firms to carry out a consultancy assignment that will be aimed at assessing the performance of the following;

- The maintenance services provided by existing APMs, local shop owners and linkages to spare parts suppliers
- The maintenance service provided by BUAs
- The relative effectiveness of Borehole banks vs “traditional” water user committees on functionality of boreholes, through developing an understanding of fund availability, relative participation of community members and speed of repairs, under these two models.

3.0 Main Objective

The main objective of the study is to provide an in-depth assessment of the performance of the institutions and arrangements listed above, and to identify capacity development needs. The resulting report will provide clear recommendations that will lead to improved performance and contribute to strengthening the sustainability of water supply services in the district. As part of the review, the consultant will review the business records of these stakeholders and interview them to develop a baseline of current performance against which future progress will be measured.

Specifically, the study will:

1. Develop a baseline assessment against which performance of service models and performance of the local institutions (borehole banks and WPCs) can be measured. Critically analyse the relative strengths and weaknesses of the APM, shop owner model and the BUA approach.
2. Critically analyse the relative strengths and weaknesses of the Borehole banking approach to community management, and the more traditional WPC approach
3. Assess the performance of BUAs, determine their effectiveness and develop a capacity-building plan to strengthen them. Further, through the assignment, the consultant should advise on the direction that needs to be ‘taken if the objectives of the BUAs are to be realised, particularly in relation to “insurance” or service contracts for borehole maintenance.
4. Explore and analyse the political, economic, environmental, institutional, and legal factors that enhance or undermine the effectiveness of the borehole banks, APMs and BUAs in Chikwawa. With this, provide an understanding of the factors critical to the success of borehole banks, and suggest approaches to wider adoption of borehole banking as basis for securing resources for pump maintenance and managing that maintenance.
5. To understand the factors which are making APMs and Borehole banks in some villages to perform much better than others.
6. To provide specific recommendations for changes and performance improvement for borehole bank operations, BUAs, shop owners and APMs services required for creating a more enabling WASH environment in the district.

4.0 Duration

It is expected that the assignment will be executed within a period of 45 working days from signing of the contract.

5.0 Expected Deliverables

1. An inception report which will include a detailed description of methodology (including survey questions and scope) and work plan, within 10 days of start of consultancy
2. A draft report focusing on preliminary results to be presented in soft copy and workshopped.
3. A final report presenting findings, conclusions and recommendations from the study. The report will be expected to have two distinct sub reports that;
 - i. Relates to the mechanisms through which communities can access repair and maintenance services — BUAs or APM and shops
 - ii. Relates to the community level institutions — Borehole banks or more traditional water user committees.

5.0 Essential Skills and experience

The work requires a team of experts that will demonstrate complementary skills and competences in line with the scope of this work. The team leader should have a broad understanding of the scope of work and will take full responsibility in delivering the work. The desired qualifications and experiences include:

- a. A minimum of Advanced University degree in relevant field with a good understanding of the WASH sector
- b. Speciality in governance and WASH, at the minimum
- c. A proven track record in carrying out similar type of work
- d. Experience in working with different national and local government bodies including community structures
- e. Familiarity with WASH issues; previous engagement with WASH related research will be an added advantage
- f. Conversant with the Malawi development landscape

6.0 Application process

The consultant(s)/firm will be required to submit a detailed technical proposal for the assignment detailing the methodologies that will be used together with a work plan and a financial proposal. The financial proposal should apart from the consultancy fees, include all reimbursable expenses such as transport and accommodation. The proposal should also include a commentary on the Terms of Reference and CVs of key team members.

Proposals should be submitted by 12th March 2018, to:
The Country Director, Water For People Malawi, P. O. Box 1207 BLANTYRE
Email: malawi@waterforpeople.org; inyahoda@waterforpeople.org
Subject: Consultancy: Assessment of Performance of Water Supply Sustainability Models

6.2. Documents reviewed

- 1) Charity Water quarterly reports (2016)
 - 2) Raw data for the list of Area Mechanics and Spare parts Shop Owners in Chikwawa District (2018)
 - 3) Madzi ndi Moyo Training Manual for BUAs
 - 4) Chithumba CTM Constitution
 - 5) Kakoma CTM Constitution
 - 6) Technical Report for Business Management Training, Mentorship and Coaching to Water Area Mechanics and Borehole Spare Parts Shop Owners in Chikwawa District.
 - 7) Borehole Banking data 2016
 - 8) Chithumba BUA information document 2016
 - 9) Kakoma BUA information document 2016
 - 10)Charity Water maintenance model proposal (Oct 2014)
 - 11)Raw data from Chapananga WP survey (Jan 2017)
 - 12)Charity Water completion report (Jan 2017)

6.3. Household questionnaire

ASSESSMENT OF PERFORMANCE OF WATER SUPPLY SUSTAINABILITY MODELS IN CHIKWAWA

HOUSEHOLD IDENTIFICATION AND INTERVIEW SUMMARY	
District name:	_____
T/A:	_____
GVH:	_____
Village:	_____
Name of respondent:	_____
(Male / Female)	Sex: _____
Date of interview:	_____ _____ _____ _____ 1 8
Enumerator (Name)	_____
	CODE: _____
Is questionnaire complete?	Yes _____ No ____
Name of supervisor:	_____ _____ 1 8 Date checked

INTRODUCTION

Hello, My name is.....I am working on behalf of **Water For People**. I have come to your house today because your household has been randomly chosen to participate in a survey. We want to learn more about how **Water For People** was doing with the Water and Sanitation, HIV AIDS, Gender, Human rights and Environment programme. I would like to talk to you about your involvement with **Water For People**, how you are doing regarding safe water supply and hygiene, HIV AIDS, Gender, Human rights and Environment issues. If you can answer our questions as honestly as possible it will help in the future development of this community. Whatever you tell us will not be disclosed to anybody. You should not hesitate to say you do not understand a question, or do not know the answer. It takes about 30 minutes. Would you be willing to talk to me? **Thank you.**

General Social-Economic status of the HH			
#	QUESTION	RESPONSE CODES	SKIP
Q1	Total Number of people in the HHs		
Q2	What is the level of education for Household head?	1 Adult literacy 2 Primary 3 Secondary 4 Tertiary 5 University 6 Did not attend 7 Dk	
Q3	What are sources of income for this Household? MULTIPLE RESPONSE	1 Business 2 Employment 3 Farming 4 Remittances 5 Casual Labour 6 Other (Specify)	
Q4	How much do you think is the HH annual income?	1 Less than 100,000 2 Between 100,000 and 500,000 3 Between 500,000 and 1,000,000 4 More than 1,000,000 5 DK	
Water accessibility and management of the HH			

Q5	<p>What is your current water source(s) for domestic purposes?</p> <p>PROBE: Any other? Any other?</p> <p>MULTIPLE RESPONSE POSSIBLE</p>	1 Borehole 2 Protected dug well 3 Unprotected dug well 4 Spring water 5 Protected Spring water 6 River/Stream 7 Tap 8 Other (SPECIFY) _____	
Q6	<p>What is the average walking distance to the nearest safe water supply?</p> <p>Please Probe</p>	1 Less than 500m 2 Between 500m and 1 Km 3 More than 1Km 4 More than 5Km	
Q7a	Does your household treat drinking water in any way to make it safer to drink?	0 No 1 Yes	
Q7b	What do you usually do to the water to make it safer to drink?	1 Boiling 2 Chlorination 3 Filter 4 Cover it 6 Water guard 5 Nothing	
Q7c	If you Chlorinate the water , where do you get Chlorine/water guard?	1 Shops 2 Health workers 3 NGO (specify) 4 Other specify	
Q7d	How OFTEN do you treat with the above	1 Always 2 Often 3 Sometimes 4 Never 8 Dk	
Increased access to sustainable water supply and management of facilities			
Q8a	Do you know any WPC members from your village that have received formal training on community based management of water point and preventive maintenance	0 No 1 Yes	
Q8b	How many WPC members from your village have received formal training on community based management of water point and preventive maintenance?		

Q9	Of all the WPCs in your village how many had inclusion of marginalized and excluded groups in the WPC? <i>(marginalized groups would be elderly, reps from chronically ill support groups like PLWHIV, disabled)</i> <i>(response like X of Y committees)</i>		
Q10	Does your water point undergo regular preventive maintenance? <i>(regular would mean every 3 months checking of wearing parts and replacing)</i>	0 No 1 Yes	
Q11	Out of the total number of people in the WPC, how many are women? <i>(response like X of Y committees)</i>		
Q12	Do you think WPCs in this village have easy access to borehole maintenance spare parts?	0 No 1 Yes	
Q13	What kind of challenges does your village face in accessing BH spare parts?	1 Expensive-Cost 2 Long distance to shops 3 Spare parts not stocked in shops locally 4 Other (explain)	
Q14	In your opinion what could be the greatest threat to sustainability of these water and sanitation facilities?	1 Lack of funds for repair & maint 2 Lack of skills 3 Non availability of spare parts 4 No ownership 5 Other (explain)	
Q15a	Do government officials visit water points in your village?	0 No 1 Yes	
Q15b	How often do Government officials visit water points in your village?	1 Once per month 2 Once quarterly 3 Once per year 4 None of the above	
Q16a	Does your water point have traces of unacceptable quality e.g. salinity, odour, colour, turbidity (zinyalala ngati madzi a matope)	0 No 1 Yes	

Q16b	What challenges do you have with your water point	1 Seasonality 2 Frequent breakdowns 3 Queuing 4 Water quality 5 Accessibility 6 Conflicts 7 Hygiene at the water point 8 Vandalism	
Q17a	Is your village adequately assisted by Health Surveillance Assistants or Extension workers to attain ODF status?	0 No 1 Yes	
Q17b	If YES what kind of support do they give to your village?	1. House to house visits 2. Sensitization meetings 3. ODF follow up visits	
Training VHWC in community based management			
Q18a	Does your household contribute towards water supply?	0 No 1 Yes	
Q18b	If YES, how much on average does your Household contribute monthly towards maintenance of the water point?	1 Up to K50/month 2 More than K50 but <K100 3 More than K100 but less than K150 4 More than K150 5 Other (specify)	
Q19a	Do you think your WPCs have a fee collection system verified through reports?	0 No 1 Yes 8 Dk	
Q19b	Do you think your WPC use the collected funds for intended purpose?	0 No 1 Yes 8 Dk	
Q19c	Are you a member of Borehole Bank	0 No 1 Yes 8 Dk	
Q20a	Do you benefit from the Borehole Bank	0 No 1 Yes 8 Dk	

Q20b	If yes how do you benefit from Borehole Bank	1 Take Loan 2 Improved services	
Q20c	If you take a loan from the Borehole bank, for what purpose?	1 Pay school fees 2 Household expenses 3 Business 4 Other specify	
Q20d	If you get a loan for a business, what kind of a business are you doing?		
Q20e	How much do you think you find as a profit from the business?		
Q20f	If you get a loan for other things (not business), how do you manage to pay back the loan.	1 Savings from salary 2 Ganyu 3 Crop sales 4 Other (specify)	
Q20g	If you benefit from the improved services, what kind of improved services?		

Stimulate the private market for borehole repairs and spare parts by sharing area mechanic shop owner information

Q21a	Do you know the existence of Area Mechanic in this area?	0 No 1 Yes 8 Dk	
Q21b	Have you ever heard that Area Mechanics have been engaged to assist in sorting any problem?	0 No 1 Yes 8 Dk	
Q21c	Are you satisfied with the services rendered by Area Mechanics?	1 Very satisfied 2 Satisfied 3 Not satisfied	
Q21d	Do you know the existence of borehole spare parts shop in this area?	0 No 1 Yes 8 Dk	
Q21e	Have you ever heard that WPC have bought borehole spare parts from the shop in the area?	0 No 1 Yes 8 Dk	
Q21f	Are you satisfied with the services rendered by borehole spare parts shop owners in the area?	1 Very satisfied 2 Satisfied 3 Not satisfied	

End of Interview and Thank the Respondent

6.4. Interview Questions for the BUAs, DCT, CDAs, APMs, Shop Owners etc.

7.0.	BUA QUESTIONAIRRE
General Information/ Relational awareness	<ul style="list-style-type: none"> - What year was the BUA initiated? - What are your major responsibilities as a BUA? What is the purpose of the BUA? - ** (flipchart) Mapping the system- who talks to who and who does what? (do as part of introductions?) - What kind of training did the BUA members receive? - How many WPCs are subscribed to the BUA? How many WPCs in the GVH are not? - How many villages/what is the population of this GVH? Are there any trading centres included in the jurisdiction? - Is there a WUA in this area? Other water projects? - Do you have data on how many WPs are functional/dysfunctional in this GVH/BUA? - How many WPCs in this BUA are using BBs?
System Linkages	<ul style="list-style-type: none"> - What is your process for conducting a repair? Who do you contact? (name, phone number, other details) - Are there APMs in this GVH? How many? Who are they? (names, contact info) - What spares shop(s) do you purchase from? - Do you collect reports from WPCs/APMs? How often are you able to monitor the water points? Who do you share this information with? How is the information used? - If you need to report major issues with WPCs/BUA/etc., who do you contact? (name, phone, etc) (- Are you in contact with the District Council? For what purposes? Who?)
Management Capacity	<ul style="list-style-type: none"> - Have you ever conducted repairs of member WPs? <ul style="list-style-type: none"> - If yes, how many repairs have you conducted? (# minor, # major) - What was the biggest repair you had to do and how much did it cost? - If a member WPC has not contributed the monthly subscription do you still provide maintenance support? (especially those who have paid in the past but are not up to date?) - What type of service contracts have you signed for repairs and/or preventative maintenance? - Are there any current or ongoing breakdowns among the subscribed WPs that you are unable to address? Why? - Has there ever been disagreements/conflict with WPCs? What were the disagreements about? How did you resolve them? - Have you ever needed to replace a member of the BUA committee? - What is your plan should you need to replace a member of in the future? - How often do you meet as a BUA? As a General Assembly?

Financial Opinions	<ul style="list-style-type: none"> - How much do you charge as the subscription fee for WPCs? <p align="center">APM QUESTIONNAIRE</p>
General Information/ Relational awareness	<ul style="list-style-type: none"> - How long have you been an APM? - What are your major responsibilities as an APM? - What kind of training did you receive? - How many WPCs are in your catchment area? - Do you have data on how many WPs are functional/dysfunctional in your catchment area?
System Linkages	<ul style="list-style-type: none"> - What is your process for conducting a repair? Who do you sign the contract with? - How often are you able to monitor the water points? Who do you share this information with? How is the information used? - If you need to report major issues with a water point or get technical support, who do you contact? (name, phone, etc.) - What spares shop(s) do you purchase from? <ul style="list-style-type: none"> - Are spares readily available at the shop?

	<ul style="list-style-type: none"> - What kind of business arrangement do you have with the
SHOP OWNER QUESTIONNAIRE	
General Information/ Relational awareness	<ul style="list-style-type: none"> - When did you start selling spares? - What kind of training did you receive? - What other support did you receive to start your shop? - Does your shop sell other products aside from spares? - Do you conduct any other type of business?
System Linkages	<ul style="list-style-type: none"> - Where do you source your spare parts from? <ul style="list-style-type: none"> - Do you ever have challenges to stock spares? - How many of these contracts were signed directly with a WPC and how many were through the BUA? (Emphasize that there is no right answer). - Are there any current or ongoing breakdowns in your catchment area that you are unable to address? Why? - Has there ever been disagreements/conflict with WPCs or the BUA? What were the disagreements about? How did you resolve them?
Financial Sustainability	<ul style="list-style-type: none"> - How much do you charge for the different service contracts? - Do you keep any financial records? (May we see them?) - Do you have any difficulties/challenges collecting fees for your services from WPCs/BUAs? <ul style="list-style-type: none"> - In your area are there any WPCs using BBs? (Are there any that are not using BBs?) Do you see any difference in ability to pay between them?
Successes, Challenges, Feedback	<ul style="list-style-type: none"> - What are some of the personal successes you have had as an APM? - What are some challenges of the job that you have had as an APM? - If this project could be started again, what would you tell W4P to do differently? - What advice would you give to others if they were to become an APM? - What do you think are the positives/negatives of the BBs? The BUA? (gather opinions)

	<ul style="list-style-type: none"> - Do you work with any APMs? How many/from where? (Name,
WPC Additional questions	
	*Note: these questions will be used in addition to the standard WPC questionnaire
All WPCs	<ul style="list-style-type: none"> - When there is a breakdown of the WP, who do you contact first? - Do you know the existence of Area Mechanic in this area? - Have you ever engaged an Area Mechanic to assist in sorting any problem? - Are you satisfied with the services rendered by Area Mechanics? - Have you ever had challenges in dealing with the APMs? - Do you know the existence of borehole spare parts shop in this area? - Have you ever purchased spare parts from the shop? - Are you satisfied with the services rendered by borehole spare parts shop owners in the area?
Successes, Challenges, Feedback	<ul style="list-style-type: none"> - What do you like about being in the spare parts business? - What are some challenges with running a spare parts shop? - Do you feel that you make enough profit to continue this type of business? - Who are your chief competitors in this business? - If this project could be started again, what would you tell W4P to do differently? - Do you ever have others express interest in starting this kind of shop themselves? - What advice would you give to others if they were to open a spare parts shop?

	<ul style="list-style-type: none"> - What are some of the successes you have had as a WPC? - What are some challenges you have had as a WPC? - What advice would you give to other organisations working with WPCs? Advice to other communities that will have a WPC? - Have you heard about BBs and what do you think are the positives/negatives? (gather opinions)
WPCs with BBs	<ul style="list-style-type: none"> - How did the BB concept come here? Did anyone train you? - Before establishing a BB, how much did you used to collect as contributions per month? - How much is in the BB now? (Cash on hand vs. in circulation) - In your opinion, what is better because of having the BB? - In your opinion, what is worse because of having the BB? - What do those that borrow use the money for usually? Is there a difference in pay back rates depending on what the money was used for (eg. School fees vs. Business venture)? - Have you ever needed to make a significant repair with a large cost associated? Did the cost exceed the cash on hand and if so, what did you do? If not, what would you do if this happened? (cost of repair exceeding cash on hand) - How do the chiefs in this area view the BB concept? - In the future, if you were to have a very large sum of money in the BB (eg. Upwards of 2 million kwacha), what is your plan to manage the fund?
WPCs with BUA	<ul style="list-style-type: none"> - Please explain how the BUA works (testing their knowledge of the structure). - What do you pay into the BUA and how often? - What value/benefit do you see in the BUA (if any)? - What do you find frustrating about the BUA (if any)?

Interview Questions for DWDO + WMAs

General Information	<ul style="list-style-type: none"> - What is the set-up of the water office in this district? Staff? Budget? - What is the main approach to monitor water points in this district? - What are the key NGOs that work in the WASH sector in this district and what are they focused on? - How has the DWDO office been involved with the project (has it been beyond supervision?) Other departments under the DCT?
System Linkages	<ul style="list-style-type: none"> - Have them go through the system mapping exercise- how do

	<p>these 4 structures interact with each other and with the District Council in practice (not theory)? Regulation, Technical Support, Communication lines</p> <ul style="list-style-type: none"> - Who do you receive reports/monitoring information from? What kind of data is it?
BUAs	<ul style="list-style-type: none"> - What were the main challenge(s) that implementation of this structure was trying to address? In other words, what was the main goal of the BUA? - Explain to me briefly the overall concept of the BUA. - How were you involved in the development of the BUA concept? - In your opinion, what have been some of the biggest successes of the BUA so far? - Conversely, in your opinion what have been some of the biggest challenges with the BUA? - What is your ongoing role in this project? - What concerns do you have about the future sustainability of the BUA? - Knowing what you know now, what advice would you give to someone considering implementing a new BUA? - How do you monitor the BUAs? - Do the BUAs provide you with any information? - Do you believe the value-add of the BUA is worth investing into future BUAs? - What do you want to do as a DWDO to improve the sustainability of the BUAs? - What has been the relative success of WUAs in CK district? Do these structures face similar or different successes/challenges? Have you considered how these structures could be integrated? Other structures that could be integrated with the BUAs? Pros and Cons. - Any other comment on the BUAs?
BBs	<ul style="list-style-type: none"> - What were the main challenge(s) that implementation of this structure was trying to address? In other words, what was the main goal of the BBs? - Explain to me briefly the overall concept of the BBs. - How were you involved in the development of the BB concept? - In your opinion, what have been some of the biggest successes of the BB so far? - Conversely, in your opinion what have been some of the biggest challenges with the BBs? - What is your ongoing role in this project?

	<ul style="list-style-type: none"> - What concerns do you have about the future sustainability of the BBs? - Knowing what you know now, what advice would you give to someone considering implementing BBs? - How do you monitor the BBs? - Do you believe the value-add of the BBs is worth investing into future BBs? - What do you want to do as a DWDO to improve the sustainability of the BBs? - Any other comment on the BBs?
APMs	<ul style="list-style-type: none"> - How many NGOs implement APMs in CK district? In what areas? - Is the management of these APMs harmonised under one network? - What monitoring and support activities do you conduct for APMs (if any)? - Do you have records of the APM activity levels/contracts signed? - Do APMs provide you with any other information/monitoring data? - In your opinion, what have been some of the biggest successes with the APMs? - Conversely, in your opinion what have been some of the biggest challenges with the APMs? - What is your ongoing role in this project? - What concerns do you have about the future sustainability of the APMs? - Knowing what you know now, what advice would you give to someone considering implementing a new APM network? - What do you want to do as a DWDO to improve the sustainability of the APMs? - Any other comment on the APMs?
Shop Owners	<ul style="list-style-type: none"> - How many NGOs implement Spares shops in CK district? In what areas? - What monitoring and support activities do you conduct for shop owners (if any)? - Do you have records of the shops sales/stocks? - Where do the shops source the spare parts? Are they readily available from a supplier? - Do the APMs and shops work together? Explain.

- In your opinion, what have been some of the biggest successes with the spares shops?
- Conversely, in your opinion what have been some of the biggest challenges with the spares shops?
- Do you have an ongoing role with the spares shops?
- What concerns do you have about the future sustainability of the shops?
- Knowing what you know now, what advice would you give to someone considering to set up new shops?
- What do you want to do as a DWDO to improve the sustainability of the shops?
- Any other comment on the shops?

Interview Questions for DCDO + CDAs

General Information	<ul style="list-style-type: none"> - What is the set up of the community development office in this district? Staff? Budget? - What is the main approach to monitor communities in this district? - How has the DCDO office been involved with the project (has it been beyond supervision?) Other departments under the DCT?
System Linkages	<ul style="list-style-type: none"> - Who do you receive reports/monitoring information from? What kind of data is it? - At what level do you coordinate with the water department and on what issues? - Are you involved with any of the other water structures aside from BBs?
BBs	<ul style="list-style-type: none"> - What were the main challenge(s) that implementation of this structure was trying to address? In other words, what was the main goal of the BBs? - Explain to me briefly the overall concept of the BBs. - How were you involved in the development of the BB concept? - In your opinion, what have been some of the biggest successes of the BB so far? - Conversely, in your opinion what have been some of the biggest challenges with the BBs? - What is your ongoing role in this project? - What concerns do you have about the future sustainability of the BBs? - Knowing what you know now, what advice would you give to someone considering implementing BBs? - How do you monitor the BBs?

- Do you believe the value-add of the BBs is worth investing into future BBs?
- What do you want to do as a DCDO to improve the sustainability of the BBs?
- Any other comment on the BBs?